

# RESOURCE MANAGEMENT PLAN

## BUFFALO NATIONAL RIVER



Recommended by: \_\_\_\_\_

*John D. Penahan*  
Superintendent  
Buffalo National River

*3/4/98*  
Date

Approved by: \_\_\_\_\_

*Daniel N. Gwin*  
Regional Director  
Midwest Region  
National Park Service

*8/3/99*  
Date

PROPERTY OF MIDWEST REGIONAL  
OFFICE LIBRARY, NATIONAL PARK SERVICE

# RESOURCE MANAGEMENT PLAN

## BUFFALO NATIONAL RIVER



Recommended by:

John D. Pinahan  
Superintendent

3/4/78  
Date

Buffalo National River

Approved by:

\_\_\_\_\_  
Regional Director

\_\_\_\_\_  
Date

Midwest Region

National Park Service

PROPERTY OF MIDWEST REGIONAL  
OFFICE LIBRARY, NATIONAL PARK SERVICE

## TABLE OF CONTENTS

I. INTRODUCTION .....	1
Purpose of the Plan.....	1
Park Purpose and Significance.....	2
Legislative Background .....	2
Master Plan .....	3
Special Designations.....	4
Resource Management Goals & Objectives.....	5
II. PRESENT RESOURCE STATUS.....	8
Status of Natural Resource Inventories .....	8
Natural Resources; Condition and Threats .....	9
External Threats.....	9
Water Resources.....	10
Vegetation .....	12
Wildlife .....	13
Watershed Land Use Practices.....	15
Wilderness & Backcountry Visitor Use.....	15
River Use; Visitor Management.....	16
Global Climate Change.....	16
Biological Diversity .....	17
Status of Cultural Resource Inventories.....	17
Cultural Resources: Significance, Condition and Threats .....	24
1. Archeological Resources .....	24
2. Structures .....	27
3. Objects .....	32
CULTURAL LANDSCAPES.....	33
ETHNOGRAPHIC RESOURCES .....	35
CULTURAL CONTEXT .....	37
III - Resource Management Program.....	38
Overview of Current Program and Needs.....	38
Natural Resource Issues .....	39
Degradation of Park Resources Due to Native Animal Species	
Overpopulation.....	39
Impacts on Threatened, Endangered and Other Sensitive Animals.....	40
Impacts on Threatened, Endangered, and Other Sensitive Plants .....	41
Degradation of Park Resources Due to Non-native Animals .....	41
Degradation of Park Resources Due to Non-native Plants.....	41
Disruption of Native Plant Communities and Accelerated Erosion	
Due to Past Land Use Practices.....	42
Degradation of Park Water Quality Due to External Activities .....	42
Alteration of Natural Flow Regimes .....	43

Visibility Impairment and Biological Damage Caused by Air Pollution .....	43
Visitor Use Impacts on Backcountry Park Resources .....	44
Loss of Park Resources Due to Consumptive Practices .....	44
Lack of Basic Data: Insufficient Understanding of Park Ecosystems and Threats to Them .....	44
Loss of Fragile and Irreplaceable Cave Resources .....	45
Cultural Resource Issues .....	45
Inventory and Documentation .....	45
Preservation .....	46
Monitoring .....	46
Museum and Archives .....	47
Planning and Management .....	44
Cultural Resources Management Capabilities .....	48

## LIST OF TABLES

Table 1: Cultural Resource Documentation Checklist.....	20
Table 2: Cultural Resource Documentation Checklist (cont.) .....	21
Table 3: Cultural Resource Documentation Checklist (cont.) .....	22
Table 4: List of Classified Structures .....	23

Bibliography

List of Projects by priority

Programming Sheet 1 - Ongoing and Funded Activities

Programming Sheet 2 - Unfunded Activities

Summary Reports

Project Statements

"...rivers and the creatures which  
inhabit them are for wise men to  
contemplate and fools to ignore."  
Isaac Walton



# I. INTRODUCTION

Buffalo National River is located in the rugged Ozark Highlands of northern Arkansas. The region is characterized by narrow valleys separated by steep winding ridges and broad mountaintops. The area's cultural adaptations span prehistoric occupation to today's modern mountain culture. The terrain reluctantly gave way to civilization; its natural beauty and the evidence of people's struggle to cultivate it remain as part of our National Park System.

The National River encompasses 150 square miles (95,730 acres) and includes 135 miles of the 150-mile-long Buffalo River from the Boston Mountains to the White River. The headwaters are within the Ozark National Forest and were recently designated as part of the National Wild and Scenic Rivers System. Overall, 11% of the 1,338 square mile watershed lies within National Park Service (NPS) administration and 29% is in other federal or state ownership. The majority (60%) of the watershed is in private ownership.

Buffalo National River is administered by the U.S. Department of Interior, National Park Service, with headquarters at Harrison, Arkansas. Natural and cultural resource programs are directed by the Superintendent through the Resource Management Division staff at the headquarters office. Maintenance, interpretation, and protection functions are administered through both headquarters staff and three district operations.

Park visitation is approximately one million annually with recreational activities including boating, fishing, hunting, caving and hiking/horseback riding. The primary recreational focus is on water and most visitor activities are directed toward this resource.

## Purpose of the Plan

The Resource Management Plan (RMP) documents Buffalo National River's natural and cultural resources, describes and evaluates its current resource management activities, and prescribes actions based upon legislative and executive mandates, agency management policies, management zoning, and provisions of related planning documents. The RMP includes a broad scope of research efforts which are in part issue driven and in part directed toward programs of national scope such as Global Change and the National Water Quality Assessment Program. Also contained within the Plan are needs for resource inventories, monitoring, mitigation actions, and

administration. A series of specific project statements are presented which comprise all of these elements and which are based on those objectives identified in the Master Plan (1977) and reaffirmed in the Statement For Management (1988). Project statements are also included which result from recently completed research, monitoring, or newly completed action plans such as the Wilderness and Backcountry Management Plan (1994) and the Fisheries Management Plan (1995).

The RMP project statements are maintained in a computerized database allowing frequent updating and analysis of resource programs and unfunded needs.

### Park Purpose and Significance

#### **Legislative Background**

Formal recognition of the Buffalo River's outstanding scenic and recreational qualities began with the establishment of Buffalo River State Park in 1935 and culminated in the creation of Buffalo National River 37 years later. Public Law 92-237 of March 1, 1972 (86 Stat. 44) established Buffalo National River as a part of the National Park System *"...for the purposes of conserving and interpreting an area containing unique scenic and scientific features, and preserving as a free flowing stream an important segment of the Buffalo River in Arkansas for the benefit and enjoyment of present and future generations..."*

This act incorporated an expression of the unique character of the river and provided specific direction for its use:

The unique scenic and scientific features of the area are to be conserved and interpreted.

The river is to be preserved as a free-flowing stream.

Fishing and hunting opportunities are to be provided.

A wilderness study would be made.

The U.S. House of Representatives Committee Report (1972) explained the basis for establishing the Buffalo National River.

*"Because it is a pure, free-flowing stream which has not been significantly altered by industry or man, it is considered to be one of the*

*country's last significant natural rivers. It is not one single quality, but the combination of its size, its completeness, its wild qualities, and its associated natural, scenic, and historic resources that makes the Buffalo worthy of national recognition".*

In addition, the Buffalo National River enabling act, states that "*The Secretary shall administer, protect and develop the Buffalo National River in accordance with the provisions of the Act of August 25, 1916..*". The central provision of that Act mandates the National Park Service to "*conserve the scenery and the natural and historic objects and the wildlife therein*" for the enjoyment of present and future generations.

### **Master Plan**

The park's Master Plan (1977) emphasizes the importance of the river as the unifying feature of Buffalo National River.

*"The Buffalo River is recognized as the central element of the whole array of natural and historical features in its setting. It has clean, clear water uniting all elements in philosophical coherence."*

The Master Plan describes a land classification system, a visitor plan, and a general development plan. It also defines specific resources management objectives. The potential for various internal and external threats to this preservation effort is recognized and discussed in relation to increased recreational use, development of facilities, and landuse practices within the watershed.

*"It is essential that increased recreational use of the watershed does not contaminate the river."*

*"The river's natural setting must be maintained. Recreation facilities and support structures must be situated where they will blend with their surroundings...the natural riverbank cover of trees and shrubs will be maintained where presently intact and allowed to revegetate where denuded"*

*"...continuation of the river in its pure and attractive state depends upon the entire watershed; activities and industries upslope affect the water quality..."*

The Master Plan zoning and land classification scheme includes 8,190 acres in a development zone and 9,407 acres in three private-use zones. The remaining 78,133 acres are classified as a conservation zone (Master Plan 1977).

The Master Plan recognized the importance of open fields as an element of the river's pastoral landscape and scenic quality. The Master Plan provides for a "Natural Environment Zone" with natural and pastoral subzones. Areas within the pastoral subzone are to be perpetuated as open fields through agricultural use or other methods (i.e. prescribed burning). The Master Plan does not specify which areas within the "Natural Environment Zone" are in the natural or pastoral subzones. Interpretation of the Master Plan's intentions regarding pastoral landscapes have varied. For two of the three areas zoned as a "Private Use Zone," Boxley and Richland valleys are predominately agricultural lands in private ownership (subject to easement requirements) and the mandate to preserve the cultural landscape is clear. Agricultural activities within the National River include private lands with scenic easements and Use & Occupancy lands. Additional fields along the river, owned in fee by the NPS, are maintained using special use permits or historic leases to permit hay cutting or grazing. Scenic easement lands will remain in private ownership, while U&O reservations will be expiring over the next 10 years. Agricultural special use permits are issued for 5 years and historic leases extend for 20 year terms. Farming in these areas consists of cattle grazing and hay cutting on improved pastures.

The Master Plan recognized that existing knowledge concerning natural and cultural resources was incomplete. It emphasized the need for:

- intensive monitoring of water quality
- archeological and historical inventories and preservation
- monitoring river use and determining carrying capacities
- determining the origin of clearings
- determining the nature of plant succession, the role of fire, and distribution of endemic plant species
- development of a flood warning system
- determine status of mammals and protection needed

### **Special Designations**

Overlaid on the National River's designation within the National Park System are several additional legal and administrative designations. Over one third of the National River was included in the National Wilderness Preservation System in 1978 and is administered in accordance with the Wilderness Act of 1964. Four historic districts, one individual building, and one archeological site within the National River

have been placed on the National Register of Historic Places and several other areas are considered eligible.

Boxley Valley is one of the most complex management areas within the National River: a historic district with archeological overlay, a cultural landscape, an agricultural economy, and the upper reaches of the river. The Boxley Land Use Plan/Cultural Landscape Report refined the private use zone classification, leading to the return of selected fee-title lands to private ownership in a process that is still ongoing. The plan's objective is "*to perpetuate a harmonious relationship between the private, agricultural community and the historic scene, natural resources, and appropriate visitor use.*" The balance of preserving the values for which the National River was established while allowing for continued use of the valley farms remains a challenge for management.

The Buffalo River and the surrounding Ozark region was currently the object of another effort to recognize its special status as part of a candidate regional Biosphere Reserve under the United Nations' Man and the Biosphere Program (MAB). This designation was to have been shared with Ozark National Scenic Riverways, Ozark National Forest, and Mark Twain National Forest would recognize the Ozark Plateau under the Unglaciated Interior Plateaus Biogeographical Province as suitable ecological units. The effort was disbanded after six years work by agencies from Missouri and Arkansas due to public misconceptions about its intent and rumors of a United Nations take over of private lands.

### Resource Management Goals & Objectives

Management goals stated in the Master Plan and the Statement for Management are highlighted, specific objectives derived from these goals are listed.

1. **Preserve the National River scene and maintain a free-flowing, non-polluted river.**
  - Maintain a base funded water quality monitoring program which encompasses physical, chemical and biological characteristics to determine baseline conditions and natural variability, detect trends, and enable the development of water quality standards specific to the area.
  - Document and analyze land use changes within the watershed to enable correlation with water quality trends.

- Manage riparian lands to protect or restore, a minimum one hundred foot forested riparian corridor on either side of the river.
  - Determine groundwater drainage basins feeding springs and surface streams within the National River.
  - Utilize all available management opportunities to implement effective agricultural "best management practices" within the National River to minimize impacts on water quality.
  - Cooperate with federal and state agencies, local governments, and nongovernmental organizations to develop strategies for watershed protection.
  - Implement and support the Water Education Team program within high schools in the watershed to promote water resource monitoring and awareness of water resource issues.
  - Assist in the maintenance and administration of Buffalo National River's flood warning system.
2. **Manage for the perpetuation of natural and cultural resources, while providing recreation for visitors in such a manner that the impact on the environment will be minimized.**
- Fully implement the River Use Management Plan and Wilderness Management Plan.
3. **Coordinate, encourage and administer a viable and purposeful research program.**
- Maintain cooperative agreements to carry out cooperative research projects.
- Facilitate selected non-NPS funded research projects with project support in the form of housing, transportation, and supplies.
4. **Inventory and monitor park resources.**
5. **Reintroduce extirpated species where feasible.**
6. **Provide special protection for rare and endangered flora and fauna.**

- Implement an effective protection strategy for caves utilized by endangered gray, Indiana, and Ozark big-eared bats.

- Monitor wintering bald eagle populations and potential nesting activity.

- Assess the status of state and federal species of concern such as the alligator snapping turtle on the Buffalo River.

- Cooperate with the Arkansas Natural Heritage Commission to maintain a database on the status of federal and state listed plants and animals.

**7. Open fields will be maintained where scenic qualities and wildlife habitat will be restored.**

- Identify specific areas to be maintained and appropriate management methods (i.e. agricultural or prescribed fire).

- Determine pre-settlement species diversity patterns and quantity and quality of open field habitat.

- Attempt to restore a pre-settlement landscape diversity, associated native plant communities, and a more natural diversity of woodland dependent and open field dependent wildlife species.

## II. PRESENT RESOURCE STATUS

### Natural Resources

#### A. Natural Resource Baseline Information

Inventories related to water resources, caves, air quality, endangered species, soils, and geology are reasonably complete but natural resource inventories of Buffalo National River are still deficient in a number of areas.

#### STATUS OF RESOURCE INVENTORIES

Resource Inventory Elements	Comments	Poor	Fair	Good
Historic Scientific Collections	Uncompiled	↓		
Automated Resource Bibliography				↓
Vascular Plant List	Not specific to BNR		↓	
Vertebrate Animal List	Not specific to BNR		↓	
Invertebrate Animal List	Limited to aquatics	↓		
Threatened or Endangered Species List				↓
Distribution of T/E Species			↓	
Soils Maps (SCS "Order 3" surveys)	Not Digital		↓	
Geology Maps	Not Digital		↓	
Digital Cartographic Data	1:100,000		↓	
Water Quality				↓
Stream Discharge	50 + years USGS data		↓	
Weather				↓
Vegetation/land cover map	1:24,000		↓	
Aerial Photography	Multi-sets from 1940 to 1992, color, IR, and BW			↓
Caves	Automated Database			↓
Air Quality	Wet Deposition, Particulates			↓



## **B. Natural Resources - Condition and Threats To The Resources**

This subsection discusses the nature and severity of major threats to the natural resources. It also provides a description of the condition of those resources and values that play a major role in park management concerns.

### **1. External Threats**

External threats from changing land use and development are major concerns for park resource protection. The rationale for this concern includes:

- poorly delineated park boundaries,
- poor land use practices along tributaries including clearing of riparian forests, direct access to streams by cattle, stream channelization, and gravel mining,
- growth of major metropolitan areas and tourism sites (i.e. Branson) within the region,
- impounding of river tributaries outside of park for water collection and recreational use,
- the small portion (11%) of the Buffalo River watershed within National Park Service administrative authority,
- increase of poultry and livestock operations, with minimal state regulation, adjacent to the park and throughout the watershed,
- increased deforestation with conversion to pasture
- karst geohydrology of the area expediting rapid transport of pollutants via underground water systems,
- lack of authorized solid waste disposal system leading to illegal dump sites,
- absence of local building codes and zoning control in rural areas,
- finally, little information exists on groundwater recharge to the National River.

The need for careful vigilance of potential external threats was illustrated by a proposed landfill at Pindall, Arkansas. A State permit was granted for the landfill, but subsequent hydrologic studies demonstrated landfill leachate would impact a major spring within the Park. The permit was eventually rescinded. The granting of a permit without sufficient site evaluation illustrates the potential for similar issues to arise in the future.

In recent years logging operations and clearing of forested land for new pasture have increased on private lands within the watershed. The lack of an effective state regulatory program creates the potential for serious water quality degradation if operators choose to ignore the state's voluntary best management practices. U.S. Forest Service activities within the watershed include even-age timber management, road construction, and the use of herbicides to suppress non-commercial tree species.

## 2. Water Resources

The geology and hydrology of the Buffalo River watershed are unique because of a combination of factors such as karst geomorphology, steep topography, shallow soils and highly interactive ground/surface water. This permits rapid transport of both surface and ground water from the surrounding landscape to the park, even from areas outside the delineated watershed.

The Arkansas Department of Pollution Control and Ecology has designated the Buffalo River and Richland Creek (a tributary) as "Extraordinary National Resource Waters" providing the highest water quality standards and protection through a policy of antidegradation. The water quality of the Buffalo has remained relatively unpolluted due to the large amount of forested land, few point source pollution sources, and a relatively sparse population within the watershed. Water quality problems are related to high fecal coliform bacteria levels, sediment loading, and nutrient enrichment from a variety of animal operations, sewage treatment operations, inadequate rural septic systems, and runoff from bare ground. Most contaminants originate from nonpoint agricultural sources and can be extremely high under appropriate conditions.

Within the steep terrain of the Ozarks, storm runoff from unpaved roads and cleared land carries both fine and coarse sediments to streams. This results in unstable stream channels, eroding stream banks, and degraded aquatic habitat. While rigid stability is not natural to a free-flowing river, some of the channel instability occurring on the Buffalo River is the result of both current and historical landuse practices

within the watershed. Determining the precise origin of changes at each site is difficult and sometimes impossible.

Following several short-term water quality studies in the 1970s and early 1980s, the NPS initiated a regular monitoring program in 1985. With increasing staff responsibilities, and an expanding water quality monitoring program, the need for a higher level of professional expertise was recognized. In 1989, a water quality laboratory was constructed and in 1990 a Hydrologist position was added to the staff.

However, routine monitoring still continues to occupy much of the professional hydrologist's time and many documented problems or potential issues remain to be addressed. Programs such as The NPS Global Climate Change program, National Water Quality Assessment Program, and state-wide programs incorporating the river continue to require much of the hydrologist's time in coordinating these programs. Additionally, the hydrologist participates in a "hydrologists affiliates" program funded by the NPS water resource division to assist units with water resource issues.

A proposal for water impoundments was the key issue leading to the establishment of Buffalo National River. BUFF's enabling legislation prohibits the federal licensing of water-related projects on or directly affecting the Buffalo National River. The potential development of impoundments or diversion projects on major tributaries outside the National River boundaries remains a locally perceived need and obtaining instream flow data to address this issue is a critical need.

The U.S. Geological Survey's National Water Quality Assessment Program (NAWQA), will assist the park in acquisition of critical baseline data to describe status and trends in quality of ground and surface water within the Ozark Plateau. Two sites within Buffalo National River have been included in the study design for this program. In addition to the Global Climate Change Research and NAWQA program the park has completed a Hazardous Materials Spill Plan (1993) and is working towards a Water Resources Management Plan (draft).

Funding is a critical limiting factor in the development and expansion of the water quality program. As issues increase in complexity and program requirements expand, the park's ability to respond to critical water quality issues may be jeopardized due to lack of funding. Many projects such as instream flow model development, spring recharge delineation, etc. are identified in the following project statements, necessitating additional staffing and operating funds.

### 3. Vegetation

The National River has a variety of vegetation types ranging from beech forest to cedar/sandstone glades. Additionally, many of the tributary drainage's represent unique botanical areas with relic plant communities surviving regional climate change due to micro-climatic conditions created along steep north facing slopes.

The status of existing open fields maintained to perpetuate the pastoral scene will be influenced by a recent decision record to consider those fields currently under permit as sufficient to maintain the historic pastoral landscape. Requests for actions to maintain additional fields for uses other than agriculture will be considered on a case-by-case basis.

A herbarium containing several hundred plant species is being maintained. A computerized vascular plant database was initiated in 1991 which compiles information on plant occurrences in the Buffalo River area from a variety of sources. Cooperative efforts are also being developed with the Arkansas Natural Heritage Program to share information. Few formal botanical surveys have occurred within the river since 1977, when a limited study of 8 sites was completed. Limited knowledge of species decline due to loss of habitat exists, the effects of fire suppression on native vegetation has received limited study, and the impacts of the alterations of hydrologic patterns by construction of roads, trails etc., are unknown.

A vegetation map, produced in 1978, utilized general vegetation classification systems. Recent ground truth attempts have confirmed the need to revise and update this existing map. The service-wide effort to standardize vegetative classifications and produce vegetative cover maps will improve the National River's vegetative data. A 1992 survey of cedar glades documented the location and status of 54 sites and provided voucher specimens of one hundred ninety-three species. A botanical survey of a unique post-oak barrens community in the Lower Wilderness was completed in 1993 and documented 240 plant species. Permanent vegetation plots were established and a collection of voucher specimens were included as part of the survey.

Working with the National Park Foundation and Canon U.S.A., a rare plant survey of seeps and springs identified forty-two populations of rare plants.

Recent (1996) surveys of riparian areas within the park documented 377 plant species including 12 species which were rare for the state or federal category species.

Many exotic plant species have been documented within the park but only one, kudzu, has an active control program. Mimosa appears well adapted to frequently disturbed riparian sites and may represent a serious competitor to native riparian species. The park will undertake a mimosa control effort as part of the goals and objectives in the Government Performance Results Act of 1993 to control 35 acres of mimosa disturbed lands. Tall fescue and other non-native forage grasses dominate both active and abandoned agricultural fields.

#### 4. Wildlife

The Master Plan (1977) established objectives for wildlife management noting that Buffalo River's wildlife habitat is of moderate value and should not be overemphasized at the expense of other resources of national significance. Since hunting and fishing is specifically provided for in the area's enabling legislation, the proper management of game species requires additional monitoring and research to prevent over harvest. The Master Plan does endorse habitat management when it can be *"coordinated with other programs such as improvement of scenic or general wildlife habitat and maintaining open fields"* (pg. 42).

Hunting is permitted within Buffalo National River in accord with regulations set by the Arkansas Game and Fish Commission. Popular game species include white-tail deer, squirrel, cotton-tail rabbit, turkey, and black bear. The Arkansas Game and Fish Commission has also expressed its intent to manage the introduced Rocky Mountain elk herd for sport hunting during the fall of 1998. Data regarding the amount of game animals taken within Buffalo National River are not available. The NPS and the state have agreed to cooperatively manage the BUFF as a separate state wildlife management area. This status facilitates the development of site/species-specific management objectives and hunting regulations.

However, little is known regarding many animals within the park and the staff relies on visual sightings by individuals of variable levels of experience to confirm existence of many species. Little data exists on the occurrence or distribution of reptiles and amphibians, expansion of black bear populations, neotropical migratory birds (recent avian surveys by the University of Arkansas did describe species present and emphasized the value of open fields), etc. Attempts to correct these and other needs are expressed in the series of project statements devoted to wildlife management and threatened and endangered species.

Resident species listed as endangered under the Endangered Species Act include gray, Indiana, and Ozark big-eared bats, and southern bald eagle. Several species, such as the alligator snapping turtle, are candidates for future listing.

Karst features, including the longest cave in Arkansas, are abundant due to the widespread nature of underlying limestone and dolomite within the National River. Over 200 caves and numerous springs and sinkholes have been located. Thirteen of these caves have been identified as habitat used by the endangered gray bat, Indiana bat, and Ozark big-eared bat. NPS staff, working with the Arkansas Game and Fish Commission and USFWS, monitor these populations in accord with their respective recovery plans. A system for closure and permitting is utilized for resource protection and recreational activities. The mapping of these caves, biological surveys, extensive surveys for additional caves and bat populations, and delineation of recharge areas remain a critical need.

Several species have been re-introduced within or adjacent to the park since its establishment including ruffed grouse, turkey and elk. Limited cooperative monitoring programs with the Arkansas Game and Fish Commission (AGFC) are on-going for these species. The park and AGFC are cooperating in an extensive monitoring program for the re-introduced elk herd now resident within the national river.

The Buffalo River's fishery has received limited study or management since 1972. The Master Plan generally endorses a non-intensive fisheries management program which accepts the natural limitations of the stream's productivity. Long standing issues have been resolved with the completion of a joint Fisheries Management Plan with AGFC and the Ozark National Forest. Issues involving the Arkansas Game & Fish Commission's "put-and-take" stocking of channel catfish have recently focused management's attention in this area. Current cooperative research between the AGFC, USFWS and NPS hopes to answer several questions regarding the successful reestablishment of channel catfish as a naturally reproducing population.

Questions regarding species management, hunting, introduction of extirpated species, and research issues have gone unanswered due to lack of manpower and funding while limited efforts are directed toward the routine monitoring of threatened or endangered and re-introduced species.

The park has begun an aggressive campaign to collect baseline data on selected species for which it has limited or no knowledge of their presence. A 1995 survey of the river documented the presence of the Ozark shiner (*Notropis ozarcanus*, a category fish species. Another survey completed in 1996 focused on freshwater

mussels in an attempt to replicate a 1912 survey. Twenty-one species of mussel were found which occurred in 1912 and many of the original beds were relocated.

## 5. Watershed Land Use Practices

Past and current agricultural practices have accelerated normal erosional processes in many areas along the river. Farming techniques which utilize riparian areas have resulted in the removal of trees, shrubs, and other vegetation which provided bank stabilization. Loss of forest cover within the watershed has possibly increased both flood peaks and the amount of stream bed gravel in the river channel. These changes have been linked to increased stream bank erosion, especially in tributaries. The accelerated erosion may also be impacting the fishery through increased siltation, loss of riparian habitat, and has the potential for increased conflicts with the farming community.

## 6. Wilderness & Backcountry Visitor Use

Resource Management programs concentrating on recreational impacts involve trails, river use, equestrian use, and campsite impacts. While trail construction has been a major thrust, funding for maintenance of these trails looms as a potential major issue.

Increased demand for horse trails, associated camps and potential for commercial operations form the nucleus for conflict with other recreational uses such as hiking.

A Wilderness and Backcountry Management Plan has been prepared using the Limits of Acceptable Change (LAC) process which developed specific standards for the condition of backcountry resources and provide public involvement in developing this document.

Accurate measurements or even estimates of the amount of backcountry use are difficult to obtain due to the National River's many access points and the dispersed nature of the recreational use. Much of the backcountry use is day-use only and does not involve camping.

Backcountry visitor use has caused some deterioration of natural resources along hiking/horse trails and through the establishment of volunteer campsites. Cutting switchbacks, social trails and areas of heavy use causes loss of vegetation, soil compaction, and soil erosion. The present direction for backcountry management is outlined within the Wilderness and Backcountry Management Plan.

## 7. River Use; Visitor Management

The park estimates approximately 1,000,000 visitors use the National River annually. Most activities involve canoeing, camping, caving, picnicking, hiking, swimming, sight-seeing, hunting and fishing.

The River Use Management Plan (1983) addresses recreational river use and has established maximum use levels for various river segments and time periods (weekends vs. weekdays) based on data collected in 1981. The Plan also called for on-going surveys to monitor visitor use within these segments but none have been initiated since 1981. The lack of use data for individual river segments has made it difficult to assess the success of management efforts to achieve the plans' objectives.

## 8. Global Climate Change

The Ozark Highlands Global Climate Change program, shared by Buffalo National River and Ozark National Scenic Riverways, represents a partnership of two NPS units, with participation by several universities and National Biological Survey. Many climate change models place the Ozark Highlands in an area which could be radically affected by changes in precipitation and stream flow caused by global climate.

A primary focus of the Global Climate Change research is the impacts to streams, their biota and associated riparian communities. A research plan was implemented and long-term studies of stream ecology and the geomorphology have been implemented.

Reconstruction of previous precipitation patterns and streams flows is possible using tree-ring dating. A research program studying eastern red cedars as old growth remnants to reconstruct past climate changes was completed in FY95. Valuable insight into the natural hydroclimatic variability of the Ozark Highland region over the last 300-1000 years was provided.

While many of these Global Climate Change research programs are designed to be long-term and answer questions regarding future climate events the immediate benefit to the NPS units will be the collection of baseline data for addressing immediate resource issues. The initial 5 year phase of this program has been



completed (1996). A meeting to set new directions for the program will be held during 1998.

## 9. Biological Diversity

Little is known of declining plant diversity due to habitat loss, environmental degradation from acid rain, fire suppression, etc. Unique areas comprised of cedar/sandstone glades, oak savanna remnants and other floral communities have not been surveyed for floral diversity and encroachment of species which may alter habitat.

The few populations of Federal candidate species which have been documented were found mostly by chance as observant staff and researchers were conducting other missions. Data on populations of reptiles and amphibians, which are a critical issue because of global population decline, are almost totally lacking, especially for documented species such as the Alligator Snapping turtle.

However, recent surveys during 1994-1996 added to the parks knowledge of species of concern. Studies done in 1994 of the Cecil Creek area in conjunction with a perceived threat of spraying for a gypsy moth infestation documented the following: ninety-three species of Lepidoptera in nineteen families, seventy-one genera of terrestrial insects including one new species and several state records, four species of aquatic snails and twenty-seven terrestrial snail species including ten county and one state record, and a herpetofaunal survey which identified 34 species. Subsequent snail surveys have documented fifty-seven species and fifteen families. A 1996 rare plant survey of seeps and springs identified several populations of species of concern (federal and state). Finally, recent biodiversity studies of three springs associated with Fitton cave and two tributaries of the Buffalo River which focused on aquatic insects and crustaceans identified several species and high species richness for all areas studied.

# Cultural Resources

## A. Status of Cultural Resources Inventories

The National River contains all identified resource types: archeological sites, structures, objects, cultural landscapes, and ethnographic resources. Each of these resource types is summarized in the following sections.

The Cultural Resource Baseline Checklist documents the current status of cultural resource inventories at the National River. Resource isolation, a humid climate, and dense vegetation make cultural inventories difficult to conduct.

1. NPS Planning Documents. Cultural resource status has been integrated into all current planning documents.

- The park does not have a GMP, but uses the Master Plan approved in 1977.

2. Servicewide Inventories.

- The LCS, completed and approved in 1993 in the midst of regional realignment, needs some editing and park review.
- National Register nominations have been prepared and accepted for four historic districts with a combined total of 186 contributing structures, or 75% of the current LCS listing. However, only one nomination addressed archeological, ethnographic, or cultural landscape resources as well. Most eligible archeological sites have not been nominated.
- A Cultural Landscape Inventory needs to be initiated.

3. Basic Cultural Resource Documents. Most documents either have not been done, or are so incomplete as to be unusable for the park of today.

- All the archeological documents are incomplete. A systemwide archeological survey and overview is needed.
- Basic ethnographic documents are needed. Buffalo River contains traditional associated use areas (see Buffalo River examples in NPS-28).
- A Historic Resource Study and Historical Base Map are long term needs and have been requested in all planning and budget call documents.
- A park administrative history is needed.

4. Special Resource Studies and Plans. Some collection reports are current and approved. Most structure studies are incomplete or outdated. New reports need to be funded.

- A Historic Furnishings Report is needed for the CCC cabins.
- Four Historic Structure Reports were begun in the 1980s, but all lack required sections and none have been approved as completed. Five more HSRs need to be initiated.
- Historic Structure Preservation Guidelines were prepared in an abbreviated form for lease and sellback properties in Boxley Valley. All park-maintained historic buildings lack guidelines.
- A "Land Use Plan/Cultural Landscape Report" was prepared for the Boxley and the Erbie areas in the mid 1980s. Both need to be revised to meet current standards and management concerns. Other landscapes, such as Rush and the Collier Homestead, will need CLRs.

### CULTURAL RESOURCE DOCUMENTATION CHECKLIST

Place an X in the appropriate column. Leave columns blank if document is not required for the park. Remember that items in the first section, Planning Documents, may also apply to natural resources. See NPS-28, Chapter 2, for description of each inventory or study.

TITLE	CURRENT AND APPROVED	INCOMPLETE; NEEDS REVISION OR UPDATING	NEEDED
PLANNING DOCUMENTS			
Preauthorization and Authorization			
Statement of Management (SFM)	X		
Outline of Planning Requirements (OPR)		X	
General Management Plan (GMP)			X
Development Concept Plan (DCP)	X		
Resources Management Plan (RMP)	X		
Interpretive Prospectus (IP)	X		
SERVICEWIDE INVENTORIES, LISTS, CATALOGS AND REGISTERS			
Cultural Resources Management Bibliography (CRBIB)	X		
Cultural Sites Inventory (CSI)			X
List of Classified Structures (LCS)	X		
National Catalog of Museum Objects		X	
Cultural Landscapes Inventory (CLI)			X
National Register of Historic Places			X

**CULTURAL RESOURCE DOCUMENTATION CHECKLIST CONT.**

TITLE	CURRENT AND APPROVED	INCOMPLETE; NEEDS REVISION OR UPDATING	NEEDED
<b>BASIC CULTURAL RESOURCE DOCUMENTS</b>			
Archeological Overview and Assessment			X
Archeological Identification Studies		X	
Archeological Evaluation Studies		X	
Rapid Ethnographic Assessment Procedures (REAP)			
Cultural Affiliation Study			X
Ethnographic Landscape Study			X
Ethnographic Overview & Assessment			X
Ethnographic Oral Histories & Life Histories			X
Ethnographic Program			X
Historic Resource Study			X
Historical Base Map			X
Park Administrative History			X
Scope of Collection Statement		X	
<b>SPECIAL RESOURCE STUDIES AND PLANS</b>			
Archeological & Ethno. Collections Studies		X	
Archeological Data Recovery Studies			
Collection Management Plan		X	
Collection Storage Plan	X		
Collection Condition Survey	X		
Cultural Landscape Report (CLR)			X

**CULTURAL RESOURCE DOCUMENTATION CHECKLIST CONT.**

TITLE	CURRENT AND APPROVED	INCOMPLETE; NEEDS REVISION OR UPDATING	NEEDED
<b>SPECIAL RESOURCE STUDIES AND PLANS CONT.</b>			
<b>Ethnohistory</b>			X
<b>Exhibit Plan</b>			
<b>Historic Furnishing Report</b>			X
<b>Historic Structure Report (HSR)</b>		X	X
<b>Inventory &amp; Condition Assessment Program (ICAP)</b>			X
<b>Social Impact Study</b>			
<b>Special History Study</b>			X
<b>Traditional Use Study</b>			X
<b>Other</b>			

TABLE 4: LIST OF CLASSIFIED STRUCTURES (LCS)

## SUMMARY CHART FOR STRUCTURES

Significance		Condition				Impacts				Documentation		
	Total	Gd	Fr	Pr	Unk	Sev	Mod	Low	Unk	Good	Fair	Poor
National	13	9	4	0	0	0	1	12	0	9	4	0
State	210	29	121	55	5	3	83	121	3	51	139	20
Local	40	2	5	10	23	6	29	5	0	0	11	29
Undeter.	4	1	0	3	0	0	3	1	0	1	2	1
TOTALS	267	41	130	68	28	9	116	139	3	61	156	50

## SUMMARY CHART FOR CULTURAL LANDSCAPES

Significance		Condition				Impacts				Documentation		
	Total	Gd	Fr	Pr	Unk	Sev	Mod	Low	Unk	Good	Fair	Poor
National												
State	1	1						1		1		
Local												
Undeter.	5	1	2	2		1	2	2		2	2	1
TOTALS	6	2	2	2		1	2	3		3	2	1

## SUMMARY CHART FOR ARCHEOLOGICAL SITES

Significance		Condition				Impacts				Documentation		
	Total	Gd	Fr	Pr	Unk	Sev	Mod	Low	Unk	Good	Fair	Poor
National												
State												
Local												
Undeter.	92				92				92			
TOTALS	92 <sup>1</sup>				92				92			

1. This information has never been compiled.

## **B. Cultural Resources: Significance, Condition and Threats**

Although early pre-park planning surveys identified areas of potential cultural significance, at the time of park establishment in 1972 the extent and significance of those resources was unknown. The Memorandum of Agreement executed in 1975 between the National River and the Advisory Council on Historic Preservation advised: "Only when the total resource base is known can intelligent choices be made with respect to conservation of certain sites and development of others for the benefit of current and future visitors."

Since that time a number of surveys and studies have undertaken that evaluation. The somewhat limited surveys of the 1970s to identify and assess overall park resources, gave way in the 1980s to more comprehensive but site specific identification and evaluation of resources in the wake of a decade of park development. By the mid-1990s the park had identified an abundance of individual resources but frequently lacked the overview or context in which to place them.

### **1. Archeological Resources**

Buffalo National River contains numerous archeological sites, both prehistoric and historic, spanning almost 12,000 years of human history. The most common occurrence at Buffalo National River is the overlay of historic structures upon historic archeological sites upon prehistoric archeological sites. The park has been careful to survey areas proposed for development in advance of construction work. Needed, however, is a comprehensive archeological survey of the entire park. Site condition varies from good to destroyed, with impact levels varying from low to severe. Vegetation and vandalism remain the most severe impacts.

Although numerous contract studies have provided information on a variety of archeological sites and recommendations made for eligibility for the National Register, only a handful of these sites have been submitted for review by the State Historic Preservation Officer, and only one site has been documented for listing on the National Register. An archeological component was added to the Boxley Valley Historic District in 1987, which included both prehistoric and historic sites as contributing to the district.



### Prehistoric Archeological Resources

Known archeological resources relate to over 500 sites within the National River. Studies in the Rush, Erbie, Calf Creek, and Boxley areas identified many of these sites as eligible for the National Register. Recent findings have verified the intensity and prevalence of prehistoric occupation of the region, and shed new light on the degree of civilization and development achieved by those early settlers of this drainage basin. Sites extend from the Dalton period to the Mississippian, covering almost 12,000 years of human use.

The prehistoric archeological resources of Buffalo River are summarized as follows:

**Cave Shelters** - from grand in scale (like Cob Cave on the upper river) to numerous smaller cave sites, many with human burials.

**Bluff shelters** - the rock overhangs common along the river, from which the popular name "bluffdwellers" originated

**Open sites** - from possible villages (near present Erbie campground, Calf Creek, and Boxley Valley sites) to numerous flint-knapping workshops. Cherty Limestone outcrops along the river's length contributed material for this widespread tool making.

**Structures** - discovery of a baking oven in the Boxley area and remains of the first known prehistoric house structure in the Arkansas Ozarks (at Erbie) demonstrate the high significance of this largely unknown resource. Until recently, the native Americans occupying the Ozarks were believed to make use of natural bluffs and caves for shelter rather than constructing dwellings. Testing of the site for the Erbie campground (1986-87) reveal post molds that indicate the use of constructed "pole house" shelters comparable to Mississippian sites elsewhere in the southeast.

**Objects** - Objects are the typical expression of the National River's archeological resource. Lithic debitage, as well as finished tools or portions thereof, litter the terraces above the lower flood level and the upland shelter sites. Less common are the remnants of ceramic pottery, fiber cordage, basketry and footwear, as well as charcoal and plant and animal "leftover" components from food storage/preparation. Spear and dart points, "arrowheads," grinding stones (metates/manos) and cutting

stones are fairly commonplace finds, as evidenced by striking collections of such objects in the possession of Buffalo River oldtimers.

The University of Arkansas (Fayetteville) Museum serves as a repository for many of the archeological objects recovered from the Buffalo River lands, both prior to and since the park's establishment. Hundreds of thousands of artifacts have been recovered from National River sites surveyed and tested in connection with National Historic Preservation Act compliance, in advance of facility development or other land disturbance, or preliminary to the planned conveyance of lands back to private ownership (Boxley Valley)

Sites at the National River have been professionally excavated since the early 1920s. Amateur archeologists and "pot hunters" have visited sites for many years. "Arrowheads" frequently turned up during plowings; many area residents have designed mounted displays of the points they have collected. Rarely, an apparently undisturbed site will be found during professional National Park Service surveys. Vandalism continues to be the greatest impact to the archeological resources.

#### Historic Archeological Resources

Historic archeological sites cover a period beginning in the early 1800s. Known Native American groups are the Osage, who hunted the area, and the Cherokee, who owned the land by treaty from 1817-1828. The Indian removal period brought other associated groups, such as the Shawnee, across Buffalo River lands. The most numerous sites are those associated with nineteenth and twentieth century Anglo settlement. These sites vary from vegetation covered areas with no above grade resources, to the ruins of farms and larger communities and industries. More recent sites exist from the Service-authorized removal of structures during the 1970s and 1980s. Examples of known or potential sites are summarized below:

Shawnee **Indian village site**, said to exist at the mouth of Spring Creek [no physical evidence found to date]

Former **pioneer settlements** such as Mt. Hersey, and early mill sites along the Buffalo with material remains.

The sites of **Civil War** skirmishes at Cave Mountain, Boxley Mill, and Richland Valley and of a number of guerilla or "bushwhacker" hideouts (caves and rock shelters).

Sites associated with **river transportation**, including those of Grinders Ferry and Dillards Ferry.

Sites associated with the region-wide **mining** of lead and zinc including the numerous sites in the Rush district; a major, pre-Civil War site at the mouth of Cave Creek; many sites in the lower wilderness unit; sites associated with the mines near Ponca. Also sites associated with the processing of guano from bat caves, to produce gunpowder, at several river-side locations.

Sites associated with the **logging** industry, including major milling sites and "tie slides," where logs were slid down to the river to raft floating timber, especially railroad ties to the railhead at Gilbert.

A historic resources assessment (1987-88) began the process of identifying these sites and associating them with existing resources.

## **2. Structures.**

### Early Surveys and Significance Determination

The park area is an elongated river corridor of fertile valleys and forested slopes; settlement and use has occurred along the length of the river. Structures are virtually everywhere, some still in use as part of active farms, others long abandoned.

Of the 1000+ land tracts located within park boundaries at time of establishment, about 350 tracts with known standing buildings were given a preliminary survey by NPS cultural resource professionals and by contract from 1973-1982. Using the cultural standards of the era, individual buildings which warranted further study were identified. The remaining buildings became available for salvage by the land owner, or bid out for removal.. Buildings were evaluated as individual structures alone and not for their relationship to other areas or resources. Structural ruins, and resources such as mines or bridges were not considered. Some major park areas, such as Boxley Valley, were not included in the surveys

The buildings left from that era, together with the resources identified in the 1980s during preparation of DCPs and Land Use Plans for park facility development, left an array and variety of structures for the park to care for. This list was further refined with the nomination of four historic districts and the current LCS listing.

The LCS contains 256 structures, varying from ruins associated with logging and mining, to active farmsteads still under occupancy. The designated historic districts contain 186 of those structures. The remaining 70 structures need determinations of eligibility, either as individual structures or as a multiple property district. Those resources are as varied as an 1896 country church, active until 1991; an 1890s

frame country home, long abandoned; the now wilderness-encased river farm of "Granny" Henderson, lived on until 1978; and the log Reavis cabin, used for cave research groups.

### Preservation and Condition

In 1975 an MOA with the Advisory Council approved the use of emergency stabilization until significance decisions could be made and management agreements implemented. However, even with the recognition of National Register resources, with current funding it has not been possible to bring most structures to a level where cyclic maintenance could take over, and to a large extent the emergency stabilization of the 1980s remains the highest level of preservation to date for many structures. Even for structures where more extensive NPS preservation was available, such as the smelter in the Rush District, or the log house in the Parker-Hickman district, the work may be lost without new repairs.

In Boxley Valley, implementation of a historic leasing program enabled private partnerships to undertake the care of a number of significant resources, including the 1870 Boxley grist mill. The Boxley land exchange program has also put active farms back into private ownership with protective easements. This however, has resulted in increased staff time for monitoring and advising on those easement requirements.

Historic Structure Reports begun in the 1980s are still incomplete. In general, historical data sections have been written, but architectural discussions are missing. Four reports need to be completed; five other reports need preparation. Preservation guidelines were prepared by the Southwest Region Cultural Resources Center for the lease and exchange Boxley properties. The same guidance is needed for park maintained structures.

The park does not have a work crew readily available for historic structure maintenance or repair, and in the past has brought in work crews from other areas or relied on dedicated volunteers. To ease some of the structure maintenance backlog, the resources management division in 1997 began monthly division staff workdays which include maintenance and repair at historic sites.

Many structures are isolated. Some do not receive even monthly patrols. Resource isolation, a humid climate, and increased visitor use of the entire National River continue to threaten all resources.

### National Register Eligible Structures

The **Parker-Hickman Farmstead Historic District** (entered 1987) on the upper river is the most significant pioneer farm in the park. There are nine standing buildings, including two of log. The log house, of exceptional craftsmanship, probably dates to the pre Civil War pioneer settlement period, and is among the finest examples of log architecture in the Ozarks region. It is hoped that a dendrochronology study will yield information to assist the written record.

The Historical Data section for the Historic Structure Report was completed in 1985, but other sections have not been funded. Preservation guidelines and a routine maintenance plan need to be developed for these structures.

Vandalism and weathering are the most dangerous impacts to these structures. Preservation work on the buildings in 1984 and 1988 have contributed to their good or fair condition. The eastern end of the historic district is impacted by the Erbie campground.

The **Rush Historic District** (entered 1987) is a 1300 acre district in the lower river area. It contains 47 structures varying from building ruins to standing structures like the 1886 rock smelter. Roadways still in use and abandoned zinc mines are also part of the district. Within the district is a major public access road, boat launch, and campground. The old zinc mining district is well known regionally and nationally and receives numerous write-ups in magazines and academic attention.

A field inventory and map was prepared for the National Register nomination, but the information needs to be professionally prepared on a historical base map. A resurvey and mapping to HAER standards would be the preferred alternative. The Historical Data section of the Historic Structure Report remains in draft; other sections have not been started, although preservation work has been implemented for the smelter and barn..

A Congressional mandated preservation plan with alternatives was prepared in 1990 by the Southwest Region Cultural Resources Center, but no alternative was selected.

A Historic Resource Study to address the wide range of resources in the district is needed.

The deteriorating nature of the crumbling ruins and the increased visitor use of the area make it essential that documentation be completed now. The abandoned mines are a serious hazard and are currently awaiting funding for continuation of mine gate construction.

**Boxley Valley Historic District** (entered 1987) in the uppermost reaches of the park, contains the most structures of the historic districts, including 130 on the List of Classified Structures. Boxley Valley, a living agricultural community, is a multiple layer 8000 acre district, embracing historic structures, prehistoric and historic archeological sites, and ethnographic resources.

The most documented district, it also has the most intricate planning documents and legal agreements. Since approval of a land use management plan in 1985, thirteen farms or homes have been returned to private ownership, with NPS-retained preservation easements. An additional seven farm units are NPS-owned, leased pursuant to historic leasing guidelines. Three additional farm units are retained as NPS visitor use interpretive sites. Twelve other farm units either have no NPS legal interest or are subject to broadly interpreted scenic easements.

All known structures were surveyed in 1984 in preparation for the Boxley Valley Land Use Plan/Cultural Landscape Report and assigned a level of significance. The structures were reevaluated in 1991 upon consultation with the State Historic Preservation Officer; but the final recommendations were not integrated into the 1985 Land Use Plan, which is the approved planning document. A pressing need is Boxley Valley specific design guidelines for use by the private sector and the park in preparing and assessing requests for additions, remodeling, and new construction.

Vandalism and river flooding are current threats. Managed neglect of deteriorated structures will change the character of the district over time. Modern living requirements and agricultural needs may also change the character of the district as individual property requests are decided.

The **Civilian Conservation Corps structures** at Buffalo Point (entered 1988) constitute the fourth historic district. Structures include six rustic cabins, the lodge, picnic pavilion, and the rockwork for the roadways for the old state park. The four "modern" cabins are considered contributory structures to the setting. The rustic and

modern cabins are under a park concession operation contract. The park maintains the lodge, pavilion, and roadways.

The rustic cabins' interior woodwork and design are essential features, as is the CCC-crafted rustic furniture still in use. The Buffalo Point cabins retain the highest historic integrity of all CCC park cabins in the state..

A Historic Structure report is needed. Graphic documentation of the rustic furniture was initiated in 1993 by the park historian, but a Historic Furnishings Report is still needed. Cyclic maintenance preservation guidelines were prepared in 1993 by the Southwest Region, but have not yet been integrated into the concession maintenance agreement.

The overall condition of the CCC structures is good, but professional guidance for their maintenance and repair is essential for maintaining their integrity. Impact types are mainly those from heavy visitor use and vandalism, as well as inappropriate preservation treatment. The cabins are in need of renovations to bring them into compliance with current codes.

The **Collier Homestead** at Tyler Bend is eligible as a fifth district (ruling of eligibility by State Historic Preservation Officer in 1990). The 1930s homestead has four standing structures (three of log) within the cultural landscape.

All cultural resource documents need to be prepared for this district, including the National Register nomination. A Historic Structure Report is needed, particularly because with ongoing stabilization and preservation.

These structures were rescued from encroaching vegetation and deterioration caused by weathering. Vegetation and vandalism will continue to be the greatest impacts. The district is adjacent to the park's main visitor center and easily accessed by vehicle or trail, including an accessible trail.

**Cold Springs School**, a Works Progress Administration structure of wood and rock, is on the National Register [1992] as part of a statewide multiple property nomination. No preservation work has been performed on this structure, nor any cultural reports prepared.

This structure is located within legislated wilderness and subject to wilderness use requirements. Although difficult to reach, the surrounding area is subject to seasonal hunting; the building frequently is used for overnight hunter stays. Vandalism (including that from fire), remains its greatest threat. Vegetation around the structure is extensive and will increase over time.

**The Erbie Historic Zone** was designated in 1985 after the Regional Historian determined that the Erbie community area lacked integrity as a rural historic district. The 35+ structures within the designated area, 25 of which are on the LCS, were to be managed under the special guidelines of the Erbie Land Use Plan/Cultural Landscape Report. New perspectives on cultural resources since that time indicate that the structures should be reevaluated as a district.

Other **individual structures** are scattered throughout the park. Some, such as the Shaddox cabin at Pruitt, serve park interpretive functions. Others, such as the Reavis Cabin, have been adaptively used. Some structures are situated within wilderness boundaries and preservation work is subject to wilderness requirements. Most of these structures have been evaluated for the LCS, but no other cultural reports have been prepared.

### **3. Objects**

Historical objects abound in place along the National River. They range from scattered iron or other metal objects to surprisingly intact mining, milling and farming equipment: from the occasional cowbell, and horse logging hardware found in the woods to the huge boiler for the Casey stream-powered sawmill and the array of machinery in the Villines' grist mill (Boxley).

Scraps of narrow gauge tracks, drilling apparatus, an occasional ore cast and complete steam boiler dot the Rush Historic District landscape. Several of the seven huge iron kettles (remnants) from the Confederate gunpowder works at Cave Mountain have been retained on Boxley Valley farms, although they were "completely destroyed" according to the official records of the First Iowa Cavalry (1/10/1863). Richland Valley bottomland yields bullets from the ambush sites of a Union munitions wagon train.



A variety of horse-drawing farming equipment has been acquired by the Service from various river-bottom farms park-wide, and temporarily stored in a building near the park Pruitt maintenance shop or left on-site as is the case at the former Clyde Villines farm (now National Park Service owned) in Boxley Valley. A horse-drawn road grader (intact) was discovered in a thicket in Erbie in 1987 and placed in storage at Pruitt.

A number of historic objects associated with the Boxley Mill are still within the millhouse, with some being boxed and stored at Pruitt maintenance, and other located in the Headquarters "museum" storage. A number of historical objects from the 1984 stabilization work on the Parker-Hickman buildings were inventoried, crated and stored at Pruitt. A few objects from the Morning Star Mine (rush) are at the Headquarters collection.

#### **4. Cultural Landscapes**

The park has not had a parkwide cultural landscape inventory, although cultural landscape identifications have been made. For example, the park's Boxley Valley and Rush served as field areas for Robert Melnick during preparation of his contracted report, Cultural Landscapes: Rural Historic Districts in the National Park System. [1984]. Both the draft and final report used numerous illustrations from both areas.

The land use plans for Boxley and Erbie also doubled as cultural landscape reports.

##### Boxley: rural historic landscape.

The "Boxley Valley Land Use Plan\Cultural Landscape Report" [approved 1985] won numerous awards. The plan was used to prepare the National Register nomination for Boxley Valley, which described the valley as a rural cultural landscape. Boxley Valley is such a varied and intact landscape that it has served as an example for numerous studies, most recently "Managing Culturally Significant Agricultural Landscapes in the National Park System" [draft, 1998].

The Cultural Landscape Report component of the 1985 "Boxley Plan" needs to be updated and expanded to reflect overall spatial relationships and agricultural and recreational uses.

##### Erbie: rural historic landscape

Erbie was evaluated under historic district criteria in 1984 and described in the 1985 Erbie Land Use Plan/Cultural Landscape Report. The report determined that Erbie lacked integrity as a historic district, but specific components, such as the Parker-Hickman farm, which was nominated to the National Register, and the Erbie Church, as well as the overall resource array were extensive enough to designate the area a "historic zone." In light of what is now perceived about cultural landscapes, the overall Erbie landscape should be reevaluated.

#### Rush: mining landscape

The Rush Historic District, prior to its nomination, served as a field area for Robert Melnick's cultural landscape study. Although vegetative growth has obscured sites, and many buildings have melted to ruins, the combination of landscape elements defining the activities of the mining district, both the production of ore and the community of citizens, is still very evident. The national register nomination noted that the district's elements conveyed "the sense of a 'turn-of-the century' mining operation" and that the buildings, structures, ruins, documented archeological sites, and the mines "lay out a pattern of mining and community development." The abandoned mines landscape is a significant resource which should be integrated with the ore reduction and community areas.

#### CCC designed park landscape

The CCC structures historic district is a designed landscape directly leading to a state park (Buffalo River State Park). The National Register nomination acknowledged but did not list the greater park area resources, such as the rock roadway retaining walls and culverts, the cabin area rock pathways, the auxiliary service buildings, and the overall planned design. It needs to be evaluated in terms of all its elements.

#### Collier Homestead landscape

The 1930s Collier Homestead, although having lost integrity through and later use of the farm as cattle pasture, still portrays to visitors the sense of an Arkansas homestead, including its collection of medicinal and decorative plantings established by Mrs. Collier. The cultivated boundaries and structures of the farm fulfilling the requirements of the Homestead Act are an excellent teaching arena for area schools.

### Richland Valley

Richland Valley was proposed for rural district evaluation in 1988. However, in 1990 the acreage was returned to its original management goal of private zone ownership, subject to easements to retain the pastoral landscape of hay and cattle pasture.

## **5. Ethnographic Resources**

There have not been any ethnographic surveys or studies prepared for the park, although the park certainly contains ethnographic resources. NPS-28 uses the example of "white Arkansas settlers at Buffalo River" in the section on traditionally associated groups and resource uses, and under resource types, that of "family homesteads (Buffalo River)." In 1991 ethnographic funding from WASO provided for transcription of some of the park oral history tapes and an initial oral history subject database for Boxley Valley.

The oral tradition is very strong in the area. The older residents who have been interviewed for the park can tell involved stories of hunting and fishing episodes, providing for family needs, can quote family history and names back many generations. Many remember hewing logs, putting food by, running hogs "on the mast," living a life of self sustainability, Music, particularly gospel music, is a part of most families. The oldest generation which was here when the park first began conducting oral histories has now passed; the oral history collection is a valuable ethnographic resource and needs transcription and protection.

### Boxley Valley

Boxley Valley, to quote from the Boxley Land Use Plan/Cultural Landscape Report, "*is a well preserved example of a rural Ozark Mountains valley as it has evolved over the past 150 years.*" The landscape elements, the agricultural activities, the small family farms, the relationship of the residents to the river and wooded bench, the enduring and entwined social patterns, define a specific lifeways resource. The National Register nomination, based on the Boxley Plan, emphasized the "people" landscape.

In 1985, the Center for Ozark Studies conducted a series of oral history interviews with then valley residents to ascertain what those enduring qualities were and to

assess the effect of park designation on the residents' lives. Other interviews have been done by the park with valley residents from 1974 to the present.

Although documentation on valley and its residents continues, there have not been any ethnographic reports and the information has never been compiled into usable documents. That knowledge base is needed to assist the park in interaction with valley residents, for whom co-existence with the park remains an improving but wary discussion of traditional patterns of doing things versus preservationist and conservationist standards. This has become most apparent as the park is nearing the final years of returning Boxley farms to private ownership under easement.

### Ozark Mountain Culture

Within the park watershed exists a southern mountain culture which is frequently at odds with park mandates and policy. Primary areas of concern are hunting and fishing rights within the park; road access and trail use (especially by horseback); rights of visitation to family homes and grounds, particularly cemeteries; and traditional gathering of vegetation, including medicinal plants and timbering rights. Traditional rights and ownership was a problem encountered from the very start of park planning; it continues to be a topic of concern and has led to a distrust of any kind of federal intervention.

### Native American

Many of the early Buffalo River settlers had native American lineage, particularly Cherokee. It is very common in oral history interviews with former Buffalo River residents to be told, "grandma was part Indian." It seems likely that early settlers, many of whom were from western North Carolina, were in part Cherokee. Many area residents hold tribal memberships.

From 1817 to 1828 the Buffalo River area by treaty belonged to the western Cherokee. Many of those who left for the west after 1828 must have retained ties to the Ozarks from the local oral history of Indians returning on a regular basis to gather plants.

Benge's route of the Trail of Tears came across the Arkansas Ozarks very near the park boundary; locally it is believed that part of the group crossed into the river valley, some to stay. None of this history or its affect on traditional use has been studied for the park.

## CULTURAL CONTEXT

The cultural context for Buffalo National River relates to 12,000 years of human activity associated with an area just west of the Mississippi River Valley, just east of the Great Plains, and not quite in the Southeast. It is the context of an area similar to the Appalachians in both terrain and human history. Settled first by prehistoric gatherers, utilized by modern Indian groups for hunting and gathering, and finally by settlers from the mountains of North Carolina and Tennessee, the river watershed evolved as individual pockets of humanity, distinctively individual from one end of the river to the other.

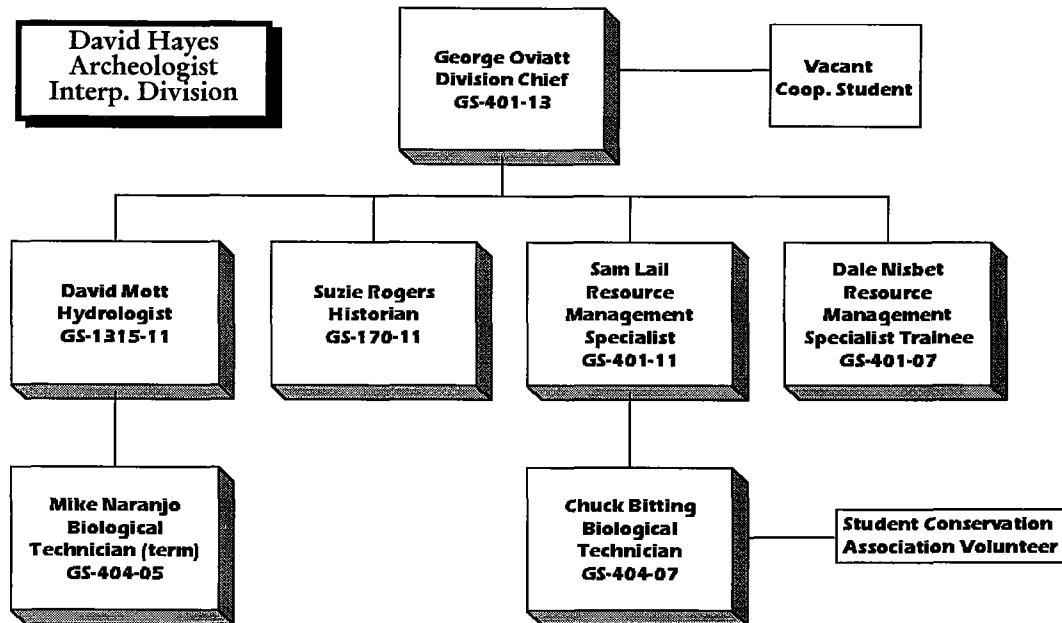
It is the story of cultural adaptation to an isolated and sometimes harsh southern mountain environment. It is the story of kinship and settlement, the growth of small river communities and social traditions, the use of river and land transportation to enter into a wider world of commerce, the change from agriculture to recreation, and the conflict resulting from traditions and values which endured by necessity into the latter part of the twentieth century.

The enabling legislation did not recognize any particular cultural context. However, the legislative testimony and early planning documents noted that "the most pervasive human theme is that of people whom the land could not support" and suggested that "the story of these people and their relationship to the land should not be forgotten." In truth, these people should be remembered because they were not losers to the land, but survivors, adapting to the land, learning to use it, and reuse it. It is because of them that Buffalo National River still enjoys the rich cultural landscape it has today.

### III - Resource Management Program

Overview of Current Program and Needs This section provides the framework for the resource management program for the National River. It provides a summary of day-to-day activities related to resource management, major issues, and both short and long-term strategies to mitigate those issues. These issues are discussed, utilizing the system-wide issues categories identified in the Resources Management Plan Guidelines (1989). The park's unfunded operational needs are also described in more detail in the following sections and in individual project statements.

## BUFFALO NATIONAL RIVER RESOURCE MANAGEMENT DIVISION



Last Revision - 1998

#### Current Program and Staffing

In 1993, Buffalo National River consolidated its resource management program into a Resource Management Division with both natural and cultural elements. The division

currently includes five base-funded FTEs. The archeologist, located in the Interpretation Division, and the Resource Management Specialist Trainee, currently assist with resource management duties. BUFF has a recently enlarged prescribed burn program and wildland fire program which is housed in the Visitor Protection Division.

Ongoing natural resource programs include an extensive water quality monitoring program, spring inventories, streambank erosion monitoring and stabilization projects, dye-tracing studies, multi-park assistance to prepare water resources scoping reports, development of a water resources management plan, air quality monitoring, campsite inventories and impact monitoring, wilderness and backcountry management planning, fish management planning, gypsy moth monitoring, endangered species monitoring, agricultural use management, cave inventory and monitoring, flood warning system maintenance, and water resource education programs.

## Natural Resource Issues

Major issues include effects of animal waste run-off as a non-point source pollutant and the resulting changes in primary productivity (i.e. algae), acceleration of stream bank erosion by agricultural land use practices, protection of cave habitat and delineation of hydrologic influences, T/E bat species, control of exotic species and increased recreational impacts. These and other issues require a comprehensive management program to identify potential impacts, threats and to mitigate problems.

In addition to these park-based issues, external threats include land-use practices, development within the watershed and potential water use issues. The most significant elements of the Resource Management Plan are related to external activities and water quality.

### N01 Degradation of Park Resources Due to Native Animal Species Overpopulation

The loss of major predators such as the red wolf and the mountain lion means that populations of many ungulate species are regulated by hunter take and disease, and may fluctuate at or near ecological carrying capacity. It is essential that the National Park Service cooperate with the Arkansas Game & Fish Commission to monitor and manage wildlife with Buffalo National River. [See N-421, N-415, N-421]

Black bear are native to the Ozarks and are monitored to a limited extent by the Arkansas Game & Fish Commission. No population monitoring is being done on or adjacent to Buffalo National River. While few nuisance animal complaints occur

within Buffalo National River, the potential for bear-visitor interactions is present and cooperation with the Arkansas Game & Fish Commission in bear management is essential for visitor safety as well as protection of the species. [See N-410]

Nuisance beaver damage and associated impacts have historically been controlled by harvesting the animal. However, data on population distribution is needed to assess this problem and issues such as the presence of giardia, mitigation of flooding from beaver dams, and determining the influence of beaver on riparian vegetation and channel stability. [See N-413]

## N02 Impacts on Threatened, Endangered and Other Sensitive Animals

The endangered bald eagle occurs as a migrant and winter resident within the National River. The park staff cooperates with the Arkansas Game and Fish Commission and U.S. Fish & Wildlife Service in an annual winter eagle survey. These surveys indicate widespread winter use of the river with a large concentration (one or more per mile) of wintering eagles on the river downstream of Buffalo Point. Recreational use is generally limited during the winter months but indications of nesting in recent years may result in a conflict with recreational use. [See N-230]

Four species of threatened and endangered bats (gray bat, Indiana bat, Eastern small-footed bat- Myotis leibii (a Candidate species) & Ozark big-eared bat - Plecotus townsendii ingens) have been found within the park. Hibernating, bachelor and maternity colonies are known to exist and are monitored during the winter and summer season. Further surveys are needed for existing colonies and to discover new populations. Such on-going surveys are critical for the protection of these species due to the changing cave use patterns. As an example, the population of hibernating Indiana bats in one cave dropped nearly 50% between 1981-1984. The largest Indiana bat population in Arkansas is found in Edgmon cave adjacent to the National River. The National River should play an active role in the protection of this resource either through an agreement with the current owner or acquisition via willing seller. [See N-220]

The alligator snapping turtle - Macrocllemys temmincki has been documented within the National River but no systematic reptile studies/surveys have been implemented [See N-420]. The Nearctic Paduniellan Caddisfly is a Candidate species and an Ozark endemic which has been found in small numbers at two sites on the upper reaches of the National River. Recent surveys have documented the presence of the Ozark shiner, a federal candidate fish species.



### N03 Impacts on Threatened, Endangered, and Other Sensitive Plants

Several Federally listed Candidate species known from the Buffalo National River area are Alabama snow wreath Neviusia alabamensis, Moores Delphinium Delphinium newtonianum, Ozark Trillium Trillium pusillum var. zozarkanum and Ozark chinquapin Castanea pumila var. ozarkensis. A few very limited botanical surveys for other species have occurred except in selected locations and areas associated with trail construction. Cooperative surveys with Arkansas Natural Heritage need to be expanded within habitats which may support these and other species of special concern. [See N-210]

### N04 Degradation of Park Resources Due to Non-native Animals

The park has documented the existence of feral hog populations within the National River. Populations are currently concentrated on adjacent National Forest land in the Upper Buffalo Wilderness Area and in the Lower Buffalo Wilderness within Buffalo National River. Illegal releases, on or near Buffalo National River, have been carried out by individuals intent on hunting the animals after their release. Areas of impact have been located ranging from wallows to the uprooting of native vegetation. No data currently exist on population size or trend analysis. The NPS is working with the U.S. Forest Service and Arkansas Game and Fish Commission on strategies to prevent future releases and eliminate the existing populations. [See N-720]

In 1992, an infestation of gypsy moths was discovered on private land two miles north of the National River's Ponca Wilderness Unit. State and federal efforts eradicated the gypsy moth from that site and involved aerial insecticide treatments directly adjacent to the NPS boundary in 1994. NPS is continuing cooperation with the U.S. Forest Service and Arkansas State Plant Board on conducting post-treatment monitoring of National River lands using pheromone traps. [See N-730]

### N05 Degradation of Park Resources Due to Non-native Plants

The Park has documented locations of alien plants that are considered serious threats to park resources. Two species exist which are listed as highly desirable for eradication or control (Kudzu and Mimosa). Both species are currently the object of a control/eradication program which is proving to be of some success. Fescue is a non-native agricultural species still grown on many hay fields and pastures throughout the National River. Long-range plans call for the substitution of native grass species to replace fescue in many suitable old fields. Funding is needed to establish native grass stands within these units. [See N-710]

N06 Disruption of Native Plant Communities and Accelerated Erosion Due to Past Land Use Practices

Past agricultural practices have resulted in the removal of trees and shrubs within the riparian zone to allow for the planting of crops and pasture up to the water's edge. The resulting bank instability has caused increased erosion, soil loss and increased siltation of reaches along the river.

Erosion control methods are being evaluated but existing control sites are limited in scope due to lack of manpower and funding. The primary objective is the implementation of best management practices by negotiating agreements with permittees, revising easement/sell-backs with restrictions as they become available and expansion of revetment control projects which emphasize stabilizing stream banks rather than channel straightening by using cedars, willow stakes, etc. Management will attempt to restore riparian zones and establish buffer areas in critical sites to slow erosion. Practices such as channel manipulation to mitigate this erosion will not be implemented under this control effort.

The majority of roads in the area are unsurfaced dirt or gravel and contribute much of the sediment washed into the river during rain storms.

N11 Degradation of Park Water Quality Due to External Activities

The water quality monitoring program, begun in 1985, monitors nine river sites, twenty tributaries and three springs under the direction of the Park Hydrologist. The program was designed with two major objectives; to determine compliance with State water quality standards and the second to establish a baseline for surface and ground water quality against which future changes can be compared.

Identified pollution problems within the watershed primarily originate from non-point sources. Potential point sources are restricted to five small sewage treatment plants and numerous private residences. Several dozen state permitted confined animal operations, an undetermined number of small non-permitted dairy and swine operations, and livestock grazing form the bulk of the non-point source problems. Livestock grazing is the predominant agricultural use.

Water quality impacts stem from animal waste runoff which contributes to elevated levels of bacteria and nutrients. High nutrient levels promote algal growth which can impair both aquatic life and aesthetic values. Elevated coliform bacteria

concentrations are common following significant rain storms and are of short duration. Coliform events do, however, coincide with peak periods of recreational use on certain segments of the River.

#### N12 Alteration of Natural Flow Regimes

Proposals to dam the Buffalo River date back to the 1930s and plans for two dams in the 1960s stimulated establishment of Buffalo National River. More recently a proposal from the city of Marshall to tap the river for a city water supply illustrates that a threat remains. Other communities are currently looking at augmenting their current water supplies and it is likely that other proposals to divert water from either the river or its tributaries will be forthcoming.

These previous actions point to a critical need to develop an understanding of the dependence of water-related resource attributes on flow. For instance, how dependent are aquatic insect and fish communities on the existing "natural hydrograph"? Will riparian vegetation communities be altered if high flows are eliminated by an upstream storage reservoir? In order to answer these questions additional streamflow and natural resource data need to be collected. This will require the installation of streamflow gauging stations and the initiation of studies to determine the dependence of water-related resource attributes on flow.

While establishment of the National River has effectively quelled the issue of dams within the boundary, the potential for alterations in the flow of major tributaries by impoundments or diversions remains a possibility. These issues and their impacts on River flow can only be mitigated by establishing flow requirements for the Buffalo River.

#### N14 Visibility Impairment and Biological Damage Caused by Air Pollution

Buffalo National River has participated in the National Acid Deposition Program since 1982 and current trend analysis shows increasing conductance and decreasing pH. This is not of immediate concern regarding the potential to impact the water quality because of the area geology and the natural buffering capacity of the river. However, the long-term effects of this increased acidity on vegetation are unknown and reinforce the need to continue monitoring for increased acid deposition.

#### N18 Visitor Use Impacts on Backcountry Park Resources

Undesignated campsites represent moderate to severe impacts to backcountry areas.

Denuded vegetation, soil compaction, accumulated trash, and fire rings are both an aesthetic and a resource issue. An campsite inventory and monitoring program has been implemented. Restoration of the more severely impacted sites awaits funding and manpower.

Many abandoned vehicles and trash dumps in the designated Wilderness areas remain from private use before lands were acquired by the NPS. Removal of these eyesores from the Wilderness Units is an on-going, costly, and time consuming effort because of the limitations involving mechanized equipment. A survey needs to be conducted to identify and prioritize abandoned vehicle locations so funding may be requested for their removal.

#### N19 Loss of Park Resources Due to Consumptive Practices

An estimated 14,500 anglers fished the river in 1991. Creel surveys implemented in conjunction with a fishery research project documented instances of fishing for subsistence purposes, collection of nongame species by snorkeling, etc. The extent of these activities and their long term effects on the fishery are not known at this time. Research is needed to evaluate these activities as well as the effect of professional guides services operating on the lower river and the overall fishing pressure.

#### N20 Lack of Basic Data: Insufficient Understanding of Park Ecosystems and Threats to Them

Inventory of resources and monitoring of key species of plants and animals are essential for park management to make informed decisions. The utilization of this baseline data should coalesce into an understanding of the complex interrelationship of biota. The computerization and storage of this data into an easily retrievable system such as Geographic Information System would provide a critical step in this understanding. Currently, the Buffalo National River does not have direct access to a GIS based data program and must rely on the Center for Advanced Spatial Technologies within the University of Arkansas which currently act as a repository for GIS data for Buffalo National River. The park also utilizes a wide variety of other sources and manual manipulation of resource base maps to meet these needs.

The recently completed (1997) U.S. Fish and Wildlife Service GAP analysis program produced state wide vegetation data at the 1:100,000 scale. This program in Arkansas was partially funded through several agencies including the NPS.

#### N21 Loss of Fragile and Irreplaceable Cave Resources

The Cave Management Plan (1984) for Buffalo National River identifies management objectives and discusses monitoring, protection, and visitor safety. It also defines a rating system for known caves within the park. Contained in this plan is the action plan for Fitton Cave identifying research needs, monitoring, and the permit system. Fitton cave is an outstanding resource representing one of the longest cave systems in the State.

However, few of the known caves are monitored on a regular basis for resource damage and many have not received an NPS inspection since the initial inventories were completed in the 1970s. Few faunal inventories for caves have been completed, and many of the identified research needs for Fitton Cave have not been completed due to lack of funding and manpower. On-going efforts by the Cave Research Foundation to map Fitton Cave are proceeding slowly and are dependent on member interest and CRF project priorities. The hydrological mapping of Fitton and other caves has not been initiated due to lack of funds.

## Cultural Resource Issues

#### Inventory and Documentation

Comprehensive inventories and evaluations need to be updated and completed. Funding for a Historic Resource Study has been requested since 1986. An administrative history of the National River is needed. Inventories of archeological resources were begun subsequent to park development, but a systematic inventory and analysis has not been completed. At present, it is difficult to prepare a systematic list to describe condition, impact, and documentation levels of archeological sites. Completion of these documents are critical for overall direction and management of park cultural resources. (C08) (C02).

The documents still in draft form (Historic Structure Reports; Determination of Eligibility) need completion. Base maps are needed for all resource types.

Cemeteries as a cultural resource and a traditional use resource need to be addressed.

The National River is in the process of inventorying and documenting cemeteries within its boundaries. Cemeteries, especially those with limited access in the designated wilderness areas, have been used by local individuals to suggest a callousness on the part of the park to local traditions. A good database inventory of the cemeteries and present impacts is an important management need.

### Preservation

In 1984 when the first serious preservation activity was initiated with the work at the Parker-Hickman farm, many structures identified for historic value had already collapsed. Preservation measures from 1984 on have been for "emergency stabilization. Those structures identified for visitor use areas and interpretation, particularly National Register structures, must be brought closer to their ultimate level of preservation. Treatment to bring the structures within the historic districts up to an acceptable standard is a critical need. (C13)

Once the structures are brought to standard, the park needs to provide and implement a plan of cyclic maintenance for these structures before any gains made by preservation are overridden by new needs. C12)

Historic preservation guidelines have been written for significant structures when non-federal caretakers share responsibility. Preservation guidelines are still needed for park-maintained resources, especially those resources in visitor use areas. (C06)

The park has received limited historic preservation and although positions for historic maintenance have been requested, they have never been funded. Timely routine maintenance is not being accomplished with the present staffing. With the volume and variety of structures at the National River, along with the preservation work required for Boxley Valley, a trained preservation specialist to advise and implement preservation efforts is essential. (C24).

### Monitoring

Resource protection has been augmented through the use of volunteers. Beginning in 1992 a site-specific handbook was developed for district ranger staff for assistance in identifying impacts within the historic districts; archeological training has also been provided. However, the remoteness of resources and the park's multiple use policies, will continue to threaten National Register resources (C18, C20). Vulnerability of archeological sites remains an ongoing concern. All park staff need to be aware of

the value of the resources and that protection is everyone's concern. Monitoring programs need to continue on a regular basis.

### Museum and Archives

The museum collections are the responsibility of the Division of Interpretation, with assistance from the Historian. Collections have received minimal attention due to the lack of staff or funding. Collection plans are being prepared but the collections have proceeded without adequate care. Archeological specimens collected during surveys and data recovery comprise the bulk of the collected objects and have had the least care. Assistance from the Region has been pivotal to beginning to care for the collection. Funding in FY93 reduced backlog cataloguing. (C03, C09) Moneys from Region have provided new storage areas for the collection and some environmental control. Cooperative agreements with area universities are being used to provide technical assistance in setting up and maintaining these facilities. (C24) Conservation has not even been attempted. (C15)

An oral history program was begun early in the park history, thanks to an interest by Harpers Ferry Center. Care of tapes and transcripts of the interviews was not begun until the late 1980s when the collection numbered over 100 tapes. The oral history collection is an essential and irreplaceable resource that needs transcribing and archiving. (C04)

### Planning and Management

One of the most complex issues for resources management at the National River is the management of Boxley Valley. The Boxley Cultural Landscape/Land Use Plan was an innovative study resulting in changing management perspectives. The reality of implementing that management is far more difficult. The park has improved his coordination of natural and cultural resource management. Easement monitoring and resulting issues a time consuming element of staff time and often leave little time for managing other equally significant areas of the park. Managing Boxley is similar to managing a small rural community of divergent needs and issues and the National Park Service is ill-prepared for this kind of task. Boxley Valley needs an interdisciplinary task team, preferably with one coordinator through whom actions would be directed and with whom the public could deal directly. (C10)

It has become apparent through the past ten years since the Boxley Plan was first implemented that planning and design information prepared with the private sector

regarding agricultural use, building construction, appropriate uses needs to be considered. A first step toward this goal would be preparation of a architectural design guidelines to help both the public and the park determine appropriate levels and types of construction in the historic district. **(C19, C57 )**

All historic districts possess cultural landscape components, from designed landscapes to vernacular. A Cultural Landscape Inventory of the park is needed and identification and evaluation of significant components. **(C11)**. This is a critical need as the overlay of other recreational use within the districts based on visitor needs of other than cultural values has led to erosion and deterioration of historic district integrity and conflict in management concerns (C18, C24). The Rush Historic District has been especially vulnerable to multiple use needs. For example, the former mine fencing project intruded on the landscape; the current mine gating projects should be more compatible.

### **Cultural Resources Management Capabilities**

Prior to 1987 the park did not have a designated cultural resources staff. In 1987 a part time historian position was added. Buffalo National River's cultural resource management capabilities improved dramatically in 1994 with the conversion of the Historian to a full-time position and the creation of a staff archeologist position. Organizationally these positions are split between two Divisions; the Historian in the Resource Management Division and the Archeologist in Interpretation. The responsibility of the museum rests with the Chief of Interpretation, with assistance from Archeologist/Cultural Resource Management Specialist. The Ranger Division assists with monitoring impacts to cultural resources; training in cultural resources has been provided. There are no historic maintenance positions on the maintenance staff. From 1986-1988 fee enhancement moneys were used to fund assistance from the Regional preservation team. Since that time, volunteers have been essential to providing cultural resources assistance and maintenance.

Additional assistance will be needed to manage ongoing projects and continue cultural resource monitoring. A cultural resources assistant position is needed. With the continuing number of preservation projects, particularly those involving park partnerships, such as in Boxley Valley or with concessions, a staff position in historical architecture is needed.



## **BIBLIOGRAPHY**

### **I. BACKGROUND AND PLANNING**

- Arkansas Soil and Water Conservation Commission. 1989. Arkansas Water Plan, Executive Summary.
- Buffalo National River and Southwest Regional Office, National Park Service. 1983. River Use Management Plan.
- Corps of Engineers. 1964a. White River Basin Comprehensive Study, Missouri and Arkansas, Interim Report on Buffalo River Basin, Arkansas. Volume I, Main Report. Little Rock.
- Corps of Engineers. 1964b. White River Basin Comprehensive Study, Missouri and Arkansas, Interim Report on Buffalo River Basin, Arkansas. Volume II, Appendix A, B, C, D. Little Rock.
- Corps of Engineers. 1964c. White River Basin Comprehensive Study, Missouri and Arkansas, Interim Report on Buffalo River Basin, Arkansas. Volume III, Appendix E, F, G. Little Rock.
- Corps of Engineers, Little Rock District. 1988. Arkansas State Water Plan, Upper White River Basin.
- U.S.D.A. Soil Conservation Service. 1983. Soil Survey of Baxter and Marion Counties, Arkansas.
- U.S.D.A. Soil Conservation Service. 1988. Soil Survey of Newton County, Arkansas.
- U.S.D.A. Soil Conservation Service. 1992. Soil Survey of Searcy County, Arkansas.
- U.S. Department of the Interior, National Park Service (Denver Service Center). 1974. Wilderness Study, Environmental Assessment, Buffalo National River, Arkansas.
- U.S. Department of the Interior, National Park Service (Denver Service Center). 1977. Final Master Plan, Buffalo National River, Arkansas.

- U.S. Department of the Interior, National Park Service, Buffalo National River. 1988. Statement for Management: Buffalo National River.
- U.S. Department of the Interior, National Park Service. 1986. Road System Evaluation for the Buffalo National River.
- U.S. Department of the Interior, National Park Service. 1987. Trail Plan for the Buffalo National River.
- U.S. Department of the Interior, National Park Service, Buffalo National River. 1992, Hazardous Spills Contingency Plan, 24 pp.
- U.S. Department of the Interior, National Park Service. 1994. Buffalo National River Wilderness and Backcountry Management Plan.

## **II. WATER AND WATER QUALITY**

- Arkansas Department of Pollution Control and Ecology. 1979. Arkansas Quality Management Plan; Chapter 5, Nonpoint Source Pollution Control Measures.
- Arkansas Department of Pollution Control and Ecology. 1984. Arkansas Water Quality Inventory Report, Segment 4J: Buffalo River and Tributaries.
- Arkansas Department of Pollution Control and Ecology. 1985. A Comprehensive Assessment of Arkansas' Least-Disturbed Streams for Review of Water Quality Standards, Part 1: The First Year's Activities in Small Water Sheds.
- Arkansas Department of Pollution Control and Ecology, 1988, Regulation #2 as Amended; Regulation Establishing Water Quality Standards for Surface Waters of the State of Arkansas: ADPC&E, Little Rock, Arkansas, 77 pp.
- Arkansas Department of Pollution Control and Ecology, 1984, Arkansas water quality inventory report: ADPC&E, Little Rock, Arkansas, 495 pp.
- Arkansas Department of Pollution Control and Ecology, 1992, Water quality inventory report: ADPCE, 80 pp.
- Arkansas Soil and Water Conservation Commission and Arkansas Department of Pollution Control and Ecology, 1979, Nonpoint source pollution assessment

summaries for the White River Basin: AS&WCC and ADPC&E, Little Rock, Arkansas.

Arkansas Forestry Commission, 1980, Best Management Practices for Silviculture: AFC, 20 pp.

Arkansas Planning Commission. 1969. Stream Preservation in Arkansas.

Babcock, R.E. and H.C. MacDonald. 1975. Automatic Monitoring--Water Quality, pp. 140-141; Geochemistry of Sediment and Water, pp. 54-103; Intensive "One Shot Water Quality Survey", pp. 21-54; Spatial and Temporal Distribution of Algae and Associated Parameters, pp. 103-116. Buffalo National River Ecosystems, Part I. Prepared by the Water Resources Research center, University of Arkansas.

Babcock, R.E. and H.C. MacDonald. 1976. Analysis of Fecal Contamination, pp. 36-50; Geochemistry of Sediment and Water, pp. 50-102; Hydrogeologic Characteristics, pp. 102-190; Resource Capacity, pp. 264-270; Water Quality Analysis and Monitoring, pp. 2-36. Buffalo National River Ecosystems, Part II. Prepared by the Water Resources Research Center, University of Arkansas.

Babcock, R.E. and H.C. MacDonald. 1978. Effect of Cattle Grazing on Fecal Bacteria Contamination, pp. 53-59; Water Quality Monitoring and Analysis, pp. 1-30. Buffalo National River Ecosystems. Part III. Prepared by the Water Resources Research Center, University of Arkansas.

Babcock, R.E. and H.C. MacDonald. 1973. Preliminary Reconnaissance Water Quality Survey of the Buffalo National River. Prepared by Water Resources Research Center, University of Arkansas.

Buffalo National River. 1989. Water Quality Monitoring Plan.

Buffalo National River. 1985-1989. Water Quality Monitoring Reports.

Dillard, T.W. 1977. The Geohydrology and Water Quality of the Upper Buffalo River Basin, Newton County, Arkansas. M.S. Thesis, University of Arkansas, Fayetteville, Arkansas.

- Gilmour, J.T., Wolf, D.C., and Gale, P.M., 1987, Estimating potential ground and surface water pollution from land application of poultry litter: University of Arkansas, Fayetteville, 36 pp.
- Fraser, Winifred E. 1988. Report on Water Quality Monitoring of Two Tributaries of the Buffalo National River.
- Halterman, S. 1983. The Buffalo National River and the Boxley Valley Land Use Plan: Some Important Water Quality Considerations.
- Jackson, J.L. and Leslie E. Mack. 1982. Arkansas Water: Why Wait for the Crisis.
- Kilpatrick, J.M., and Ludwig, A.H., 1990, Ground water resources of the upper White River basin in Arkansas: USGS, Little Rock, Arkansas, 48 pp.
- Leidy, V.A., and Morris, E.E., 1990, Hydrogeology and quality of ground water in the Boone Formation and Cotter Dolomite in karst terrain of northwestern Boone County, Arkansas: USGS, Little Rock, Arkansas, 57 pp.
- Louthian, B.L., and Gann, E.E., 1991, Water resources activities in Arkansas, 1988-91: USGS, Little Rock, Arkansas, 52 pp.
- Malcolm, J., Thornton, K., and Nix, J., 1986, Water quality monitoring program, Buffalo National River, Boxley Valley, Arkansas: Ouachita Baptist University, Arkadelphia, Arkansas, 42 pp.
- Maner, M., and Mott, D. 1991. "Mill Creek Survey". Arkansas Department of Pollution Control and Ecology, Little Rock, Arkansas, 37 pp.
- Mott, David N. 1990. "Effects of Cattle Pasture Runoff on the Water Chemistry of the Buffalo River, Boxley Valley, Arkansas". M.S. thesis, University of Arkansas, Fayetteville, Arkansas, 181 pp.
- Mott, D.N., 1991, "Water Quality Report - 1985 - 1990: Buffalo National River, Harrison, Arkansas", 36 pp.
- Mott, D.N., and Steele, K.F., 1991, Effects of pasture runoff on water chemistry, Buffalo National River, USA: in Sediment and Stream Water Quality in a changing Environment: Trends and Explanation: IAHS publication # 203, Vienna, Austria, pp. 229-238.

- Parker, David G. and Raymond Strain. 1977. The Effects of Livestock Grazing on the Water Quality of Some Tributaries to the Buffalo National River. Prepared by College of Engineering, University of Arkansas.
- Shackleford, Bruce. 1991. Nonpoint source impacts to aquatic macroinvertebrate communities of the upper Illinois River Watershed: Soil Conservation Service, Little Rock, Arkansas, 60 pp.
- Rippey, Laura L. 1977. Spatial and Temporal Distribution of Algae and Selected Water Quality Parameters in the Buffalo River, Arkansas. Arkansas Water Resources Research Center, Thesis and Dissertation Series, Report No. 1, University of Arkansas.
- U.S.D.A. Soil Conservation Service, 1991, Buffalo Tributaries Watershed - Preauthorization Report: Little Rock, Arkansas, 45 pp.
- U.S. Department of the Interior, National Park Service, Buffalo National River. 1989. Water Quality Monitoring Plan.
- U.S. Department of the Interior, U.S. Geological Survey in Cooperation with the National Park Service, Buffalo National River. 1985. The Flood Of December 1982 and the 100- and 500-Year Flood on the Buffalo River, Arkansas. Water-Resources Investigations Report 85-4192.
- U.S. Department of the Interior, U.S. Fish and Wildlife Service. 1983. Opportunities to Protect Instream Flows in Texas, Oklahoma, and Arkansas.
- Wagner, George H. 1974. Trace Elements in the Sediments of the Buffalo River, Arkansas. M.S. Thesis, University of Arkansas.
- Weeks, Don P. 1991. The Agricultural Impact on the Buffalo National River in a Sedimentary Terrain. Boxley Valley, Arkansas. M.S. Thesis, University of Arkansas, Fayetteville.
- Chaney, S.W., 1986, Water Quality Report - 1985: Buffalo National River, Harrison, Arkansas, 3 pp.
- Weeks, D.P., 1986, Water Quality Report - 1986: Buffalo National River, Harrison, Arkansas, 3 pp.

Mott, D.N., 1988, Water Quality Report - 1987: Buffalo National River, Harrison, Arkansas, 5 pp.

Mott, D.N., and Apel, J.K., 1989, Water Quality Report - 1988: Buffalo National River, Harrison, Arkansas, 71 pp.

Apel, J.K., 1990, Water Quality Report - 1989: Buffalo National River, Harrison, Arkansas, 40 pp.

### **III. GROUNDWATER AND SPRINGS**

Aley, Thomas. 1982. Characterization of Groundwater Movement and Contamination Hazards on the Buffalo National River, Arkansas. Ozark Underground Laboratory, Protem, Missouri.

Aley, T., 1985, Hydrogeologic suitability of a proposed Class I landfill near Pindall, Arkansas: Ozark Underground Laboratory, Protem, Missouri, 31 pp.

Aley, Thomas. 1986. Groundwater Tracing and Related Investigations on a Proposed Landfill near Pindall, Arkansas. Ozark Underground Laboratory, Protem, Missouri.

Aley, Thomas and Catherine Aley. 1989. Delineation and Characterization of the Recharge Area for Mitch Hill Spring, Buffalo National River, Arkansas. Ozark Underground Laboratory, Protem, Missouri.

Steele, K.F. 1984. Groundwater Quality and Mineral Deposits Relationships in the Ozark Mountains, Arkansas. Water Resources Research Center, University of Arkansas.

Steele, K.F. and J.C. Adamski. 1987. Land Use Effects on the Groundwater Quality in Carbonate Terrain. Arkansas Water Resources Research Center Publication #129, University of Arkansas.

Steele, K.F., McCalister, W.K., and Adamski, J.C., 1990, Nitrate and bacteria contamination of limestone aquifers in poultry/cattle producing areas of northwestern Arkansas: 4th International Conference on Environmental Contamination, Barcelona, Spain, p. 528 - 530.

Steele, K.F., and McCalister, W.K., 1991, Potential nitrate pollution of ground water in limestone terrain by poultry litter, Ozark region, USA: Springer-Verlag Publishers.

#### **IV. AIR QUALITY**

National Atmospheric Deposition Program. 1982-1988. NADP/NTN Annual Data Summary: Precipitation Chemistry in the United States.

United States Department of the Interior, National Park Service. 1983-1989. Visibility Data Summary Reports for Buffalo National River, Summer 1982 - Spring 1989.

Will, Strad. 1980. I. Air Quality in the Rural Ozark Region; Atmospheric Chemical Constituents that Cause Visual Impairment and Their Source. II. Ecological Baseline Studies to Assess Future Influx and Influence of Atmospheric Sulfur to the Region. Unpublished M.S. Thesis, Department of Civil Engineering, University of Washington.

#### **V. FLORA**

Babcock, R.E. and H.C. MacDonald. 1976. Vegetation on Selected Sites, pp. 190-264. Buffalo National River Ecosystems, Part II. Prepared by Water Resources Research Center, University of Arkansas.

Babcock, R.E. and H.C. MacDonald. 1977. Rare, Threatened, and Endangered Vascular Plants, pp. 48-53. Buffalo National River Ecosystems, Part III. Prepared by Water Resources Research Center, University of Arkansas.

Babcock, R.E. and H.C. MacDonald. 1978. Rare, Threatened and Endangered Vascular Plants of the Buffalo National River, pp. 44-67; Vegetation Map and Natural Areas Survey, pp. 77-83. Buffalo National River Ecosystems, University of Arkansas.

Bailey, Stephen Wesley. 1976. "Vegetation of Selected Sites of the Buffalo National River, Arkansas". M.S. Thesis, University of Arkansas.

Guyette, Richard. 1994. "Fire History of Turkey Mountain, Arkansas". A report prepared for the National Park Service, Buffalo National River. The School of Natural Resources, University of Missouri.

- Hinterthuer, Burnetta. 1977. "A Survey of the Flora of Selected Glades in Northwest Arkansas". Unpublished M.S. Thesis, University of Arkansas.
- Imrie, George G. 1990. "Tree-ring Analysis of a Virgin Red Cedar Stand, Buffalo National River". Honors Thesis, Department of Geography, University of Arkansas.
- James, Douglas, et al. 1979. Appraisal of the Avifauna, Mammalian Fauna, and Plant Communities at Developmental Sites Proposed for the Buffalo National River. Prepared by the Departments of Zoology and Botany and Bacteriology, University of Arkansas.
- Jeffries, Douglas L. 1983. "The Vegetation and Soils of Sandstone Glades of Northern Arkansas". University of Arkansas.
- Johnson, Forrest L. and Gary D. Schnell. 1988. Effects of Prescribed Burning on Plant Communities at Buffalo National River, Arkansas. Report to National Park Service, Santa Fe, New Mexico.
- Keeland, B.D. 1978. Vegetation and Soils of Calcareous Glades of Northwest Arkansas.
- Lockerd, Rose S. and M. Joseph Lockerd, et. al. 1979. Environmental Evaluation of the Buffalo National River Using the Graber Method. University of Arkansas.
- Redfearn, Paul L. 1964. Bryophytes of Arkansas I. Species of "Lost Valley" and Adjacent Regions. The Bryologist 67 (2), pp. 196-201.
- Smith, Edwin B. 1988. An Atlas and Annotated List of the Vascular Plants of Arkansas, 2nd Edition. University of Arkansas.
- Steyermark, Julian A. 1959. Vegetational History of the Ozark Forest. The University of Missouri Studies.
- Thompson, Ralph Luther. 1975. The Vascular Flora of Lost Valley, Newton County, Arkansas. Unpublished M.A. Thesis Southwest Missouri State University.
- U.S.D.A., U.S. Forest Service. 1984. Sensitive Plants of the Ozark-St. Francis National Forests.



## V. FAUNA

- Babcock, R.E. and H.C. MacDonald. 1975. Bottom Fauna, pp. 152-173; Ichthyofauna, pp. 141-152. Buffalo National River Ecosystems, Part I. Prepared by Water Resources Research Center, University of Arkansas.
- Cashner, Robert C. and James D. Brown. 1977. Longitudinal Distribution of the Fishes of Buffalo River in Northwestern Arkansas. Tulane Studies in Zoology and Botany 19 (3.4), pp. 37-46.
- Geltz, Norman R. and S.J. Kenny. 1982. The Benthic Invertebrates of the Buffalo National River.
- Harvey, Michael J. and John J. Cassidy and Gary G. O'Hagan. 1981. Endangered Bats of Arkansas: Distribution, Status, Ecology, and Management.
- Harvey, Micheal J. 1985. Status of Endangered Bat Populations at Buffalo National River, Arkansas. Project No. CX 7150-3-0017 unpublished report to the National Park Service.
- Harvey, Micheal J. 1989. Endangered Bats of Arkansas: Monitoring Populations and Status at Major Hibernacula and Summer Caves (1984-1989). Final Report to the Arkansas Game and Fish Commission, Project No. W-56-R.
- Harvey, Micheal J. and V. Rick McDaniel. 1988. Endangered Bat Use of Abandoned Mines and Gray Bat Use of the Buffalo Point Area at Buffalo National River, Arkansas. Project No. PX7150-7-0315 an unpublished report to the National Park Service.
- Hayes, Stephen G. 1990. "Denning Ecology of two black bear populations in the Arkansas Highlands". Master of Science Thesis, The University of Tennessee.
- Hoefs, N.J., and Boyle, T.P., 1990, Contributions of fish community metrics to the Index of Biotic Integrity in two Ozark rivers: Water Resources Division, Fort Collins, Colorado, 21 pp.

- Hoefs, N.J., 1989, Applying the Index of Biotic Integrity to resource inventory in the Current River Basin, Missouri: Masters Thesis, Colorado State University, Fort Collins, Colorado, 103 pp.
- James, Douglas and Edward E. Dale et, al. 1979. Appraisal of the Avifauna, Mammalian Fauna, and Plant Communities at Developmental Sites Proposed for the Buffalo National River. Prepared by the Departments of Zoology, Botany and Bacteriology, University of Arkansas.
- Johnson, James E. and Ron T. Horton. 1993. "Buffalo River Creel Survey: 1991 and 1992". Arkansas Cooperative Fish and Wildlife Research Unit, University of Arkansas.
- Kilambi, Raj V. and David A. Becker. 1977. Population Dynamics and Species Diversity of Ichtyo-Parasitofauna of the Buffalo National River. Publication No. 48, Water Resources Research Center, University of Arkansas.
- Mathis, Michael L. 1991. Survey of Trichoptera of the Upper Buffalo River. Unpublished report prepared for the National Park Service.
- Mathis, Michael L. 1991. Macroinvertebrate Community Structure at Selected Sites on the Upper Buffalo River. Unpublished report prepared for the National Park Service.
- McBride, Roy T., Raymond M. McBride, and Jenny L. Cashman. 1991. A Survey of the Florida Panther in Arkansas; 1988-1991 Final Report to the Arkansas Game and Fish Commission.
- Nelson, Thomas A. 1988. Assessment of Dog-Deer Hunting in the Lower Buffalo Wilderness Area. Fisheries and Wildlife Biology Program, Arkansas Tech University.
- Poulton, Barry C., and Kenneth W. Stewart. 1991. The Stoneflies of the Ozark and Ouachita Mountains (Plecoptera). *Memoirs of the American Entomological Society*, No. 38.
- Rabeni, Charles F., and Robert B. Jacobson. 1993. "The importance of fluvial hydraulics to fish-habitat restoration in low-gradient alluvial streams". *Freshwater Biology* 29, 211-220.

- Siegwarth, Gary L. 1992. "Channel Catfish of the Buffalo River, Arkansas: Population Abundance, Reproductive Output, and Assessment of Stocking Cacheable Size Fish". M.S. Thesis, University of Arkansas, Arkansas Cooperative Fish and Wildlife Research Unit, COOP Unit Pub. NO. 6.
- Walters, Jody P. 1993. "Intraspecific Habitat Segregation of Smallmouth Bass in the Buffalo River, Arkansas". M.S. Thesis, University of Arkansas, Arkansas Cooperative Fish and Wildlife Research Unit, COOP Unit Pub. NO. 11.
- Whisenant, Keith A. and Maughan, O. Eugene. 1989. "Smallmouth Bass and Ozark Bass in Buffalo National River". Technical Report No. 28, Cooperative National Park Resources Studies Unit, University of Arizona.

## **VI. GEOLOGY AND CAVES**

- Lindsley, R. Pete and W. Carvin Welbourn. 1977. Survey and Assessment of Cave Resources at Buffalo National River, Arkansas. Prepared by Cave Research Foundation.
- McFarland, John D. 1988. The Paleozoic Rocks of the Ponca Region, Buffalo National River, Arkansas. Geological Society of American Field Guide - South Central Section.
- Wagner, George H., K.F. Steele, and D.L. Zachry, Jr. 1975. "Trace Metals and Major Elements in Water Soluble Rocks of Northwest Arkansas". Arkansas Water Resources Research Center, University of Arkansas.
- Williams, N.F., 1975, Contributions to the geology of the Arkansas Ozarks: Arkansas Geological Commission, Little Rock, Arkansas, 106 pp.
- Craig, W.W., Wise, O., and McFarland, J.D., 1984, A guidebook to the post-St. Peter Ordovician and the Silurian and Devonian Rocks of north-central Arkansas: Arkansas Geological Commission, Little Rock, Arkansas, 49 pp.
- McFarland, J.D., Bush, W.V., Wise, O., and Holbrook, D., 1979, A guidebook to the Ordovician-Mississippian Rocks of north-central Arkansas: Arkansas Geological Commission, Little Rock, Arkansas, 25 pp.

Bush, W.V., Haley, B.R., Stone, C.G., and McFarland, J.D., 1978, A guidebook to the Atoka Formation in Arkansas: Arkansas Geological Commission, Little Rock, Arkansas, 62 pp.

## VII. ARCHAEOLOGICAL AND HISTORICAL

Bradford, Jim. 1979a. Archaeological Investigations of the Proposed Pruitt and Tyler Bend Development Areas, Buffalo National River, Arkansas. Southwest Cultural Resources Center, Southwest Region, National Park Service.

Bradford, Jim. 1979b. Archaeological Investigations of Selected Proposed Primitive Campgrounds, Buffalo National River, Arkansas. Southwest Cultural Resources Center, Southwest Region, National Park Service.

Bradford, Jim. 1979c. Archaeological Investigations of the Lost Valley, Steel Creek, and Buffalo Point Development Areas, Buffalo National River, Arkansas. Southwest Cultural Resources Center, Southwest Region, National Park Service.

Campbell, Robert G. 1975. Survey of Prehistoric Cultural Materials of Certain Areas within Buffalo National River, Arkansas. Prepared by Texas Technological University.

Compton, Neil. 1992. The Battle for the Buffalo. University of Arkansas, Fayetteville, Arkansas.

Hose, William. 1984. Stabilization of the Hickman House. Southwest Cultural Resources Center, Southwest Region, National Park Service.

Kitchen, James M. 1975. Special History Report, Preliminary Survey of Historic Structures, Buffalo National River, Arkansas, Part II. Prepared by Department of Park Administration, Texas Tech University.

Kitchen, James M. 1977. Special History Report, Preliminary Survey of Historic Structures, Buffalo National River, Arkansas, Part III. Prepared by Department of Park Administration, Texas Tech University.

Kitchen, James M. 1978. Special History Report, Preliminary Survey of Historic Structures, Buffalo National River, Arkansas, Part IV. Prepared by Department of Park Administration, Texas Tech University.

- Krakow, Jere L. 1982. Special History Report, Preliminary Survey of Historic Structures, Buffalo National River, Arkansas, Part V. Department of History, Southwest Missouri State University.
- Neidinger, Paul. 1994. Historic Structure Preservation Guidelines. Boxley Mill, Buffalo National River. Southwest Region, National Park Service.
- Panowski, Bruce. 1977. Archaeological Reconnaissance Survey of Selected Special Use Areas, Buffalo National River. Prepared by Southwest Cultural Resources Center, Southwest Region, National Park Service.
- Pitcaithley, Dwight. 1989. Let the River Be, A History of the Ozark's Buffalo River. Southwest Cultural Resources Center, Southwest Regional Office, National Park Service.
- Pitcaithley, Dwight. 1974. Historic Structure Report. Beaver Jim Villines Farmstead (draft). Southwest Region, National Park Service.
- Rogers, Suzanne. 1987. Historic Structure Report. Parker-Hickman Farmstead (draft). Buffalo National River, National Park Service.
- Rogers, Suzanne. 1984. Historic Structure Report. Rush Historic District (draft). Buffalo National River, National Park Service.
- Rogers, Suzanne. 1987. Historic Resources of the Tyler Bend Development Area. Buffalo National River, National Park Service.
- Rogers, Suzanne. 1987. Historic Resources Assessment, Buffalo National River. Buffalo National River, National Park Service.
- Sabo III, George, et al. 1990. Archeological Investigations at 3MR80-Area D in the Rush Development Area, Buffalo National River, Arkansas Volume 1. Southwest Cultural Resources Center Professional Papers No. 38.
- Scrimgeour, Robert, and Sarah Ball. 1993. Historic Structures Preservation Guide. Buffalo Point: C.C.C. Structures. Southwest Region, National Park Service.

Sellars, Richard. 1973. Special History Report, Preliminary Survey of Historic Structures, Buffalo National River, Arkansas, Part I. Denver Service Center, National Park Service.

Southwest Region Cultural Resources Center. 1989. Special History Study. Rush Historic District, Buffalo National River. Southwest Region, National Park Service.

U.S. D. I., National Park Service. 1986. Land Use Plan/Cultural Landscape Report, Boxley Valley.

U.S.D.I., National Park Service. 1986. Land Use Plan/Cultural Landscape Report, Erbie.

Vitanza, Thomas. 1991. Historic Structure Report, Physical History and Analysis Section. Boxley Grist Mill, Buffalo National River. Williamsport Preservation Training Center, National Park Service.

Wolfman, Daniel. 1974. Archaeological Inventory of the Buffalo National River. Prepared by the Arkansas Archeological Survey.

### **VIII. RECREATION**

Ditton, Robert. 1979. The Buffalo National River Recreation Study: Year One. Floaters and Their Activity on the Lower River.

Ditton, Robert. 1981. The Buffalo National River Recreation Study: Year Two. Floaters and Their Activity on the Upper River.

Marnell, Leo and David Foster and Kenneth Chilman. 1978. River Recreation Research Conducted at Ozark National Scenic Riverways 1970-1977: A Summary of Research Projects and Findings.

U.S.D.I., National Park Service. 1981. Buffalo National River Use Report 1979-1981.

Active Filter: (No filter)

Output Selections:

Sorted by: Resource Type + Priority + Project Number

Years: All years

Subtotal after change in Resource Type

rand total

02/17/98 12:32:48		PROJECT LIST		Page: 0001		
PRIORITY	PROJECT NUMBER	PROJECT TITLE	SUB-TITLE	FUNDED	UNFUNDED	PROP LAST YEAR UPDATE
0	BUFF-C-501.005	MAINTAIN MUSEUM COLLECTION	MAINTAIN COLLECTION ENVI	15.00	0.00	1994 02/12/98
1	BUFF-C-121.000	PREPARE PARKWIDE HISTORIC RESOURCE STUDY		0.00	75.00	1994 02/12/98
2	BUFF-C-410.001	NATIVE AMERICAN ETHNOGRAPHY OF THE BUFFALO RIVE		0.00	75.00	1998 02/13/98
3	BUFF-C-110.000	PREPARE ADMINSTRATIVE HISTORY		5.00	65.00	1994 02/04/98
4	BUFF-C-603.000	INVENTORY AND PROTECT CAVE ARCHEOLOGY		0.00	40.00	1995 02/13/98
5	BUFF-C-139.000	PROVIDE BOXLEY DESIGN GUIDELINES AND OVERSIGHT		0.00	0.00	1998 02/12/98
6	BUFF-C-411.003	CULTURAL AFFILIATIONS STUDIES		0.00	50.00	1998 02/13/98
7	BUFF-C-136.000	PREPARE HISTORIC STRUCTURE REPORT, ERBIE CHURCH		0.00	15.00	1998 02/12/98
8	BUFF-C-411.004	CONSULTATION WITH THE CHEROKEE AND KEETOWAH CHE		0.00	30.00	1998 02/13/98
9	BUFF-C-135.000	PREPARE CCC STRUCTURES HSR		0.00	60.00	1994 02/12/98
10	BUFF-C-604.002	ARTIFACT ANALYSIS AND REPORT WRITING		0.00	25.00	1998 02/12/98
11	BUFF-C-134.000	PREPARE HISTORIC STRUCTURE REPORT COLLIER HOMES		0.00	30.00	1994 02/12/98
12	BUFF-C-605.001	DATA RECOVERY OF LOOTED ARCHEOLOGICAL SITES		5.00	100.00	1996 02/12/98
13	BUFF-C-141.000	PREPARE CULTURAL LANDSCAPE INVENTORY		0.00	4.00	1994 02/11/98
14	BUFF-C-500.004	SITE FILES TRANSFERRED TO ASMIS DATABASE		0.00	22.00	1996 02/05/98
15	BUFF-C-114.000	INVENTORY AND DOCUMENT CEMETERIES		2.40	30.00	1994 02/12/98
16	BUFF-C-500.005	BACKLOG CATALOGGING FOR HERBARIUM		0.00	6.00	1998 02/12/98
17	BUFF-C-212.000	PREPARE PARKER-HICKMAN PRESERVATION GUIDELINES		0.00	10.00	1994 02/12/98
18	BUFF-C-601.001	INVENTORY/ASSESS PREHISTORIC ARCHEOLOGICAL RESO		5.00	400.00	1994 02/12/98
19	BUFF-C-222.000	PRESERVE ERBIE CHURCH		6.00	40.00	1994 02/12/98
20	BUFF-C-601.002	INVENTORY/ASSESS HISTORIC ARCHEOLOGICAL RESOURC		0.00	100.00	1996 02/12/98
21	BUFF-C-162.000	PREPARE NATL REGISTER NOMINATION, COLLIER HOMES		0.00	20.00	1994 02/12/98
23	BUFF-C-181.000	DOCUMENT RUSH HISTORIC DISTRICT TO HAER STANDAR		0.00	120.00	1994 02/12/98
24	BUFF-C-410.000	PREPARE ETHNOGRAPHIC OVERVIEW		0.00	40.00	1994 02/12/98
25	BUFF-C-151.000	PREPARE CIVIL WAR SITES SPECIAL HISTORY STUDY		0.00	40.00	1994 02/12/98
	BUFF-C-173.000	PREPARE HISTORIC FURNISHING STUDY, CCC CABINS		0.00	30.00	1994 02/12/98
	BUFF-C-231.000	PRESERVE CCC STRUCTURES		0.00	80.00	1994 02/12/98
28	BUFF-C-470.000	DEVELOP PARK ARCHIVES		3.70	8.00	1994 02/12/98
29	BUFF-C-321.000	MONITOR PRESERVATION WORK, BOXLEY VALLEY		56.00	85.00	1994 02/12/98
999	BUFF-C-111.001	ARCHEOLOGY VIDEO AND EXHIBIT		0.00	10.00	1996 02/05/98
999	BUFF-C-112.000	ASSESS CULTURAL RESOURCES IN WILDERNESS UNITS		0.00	20.00	1994 02/11/98
999	BUFF-C-115.000	INVENTORY/ASSESS PARK STRUCTURES/SITES		4.00	36.00	1994 02/17/98
999	BUFF-C-122.000	PREPARE RUSH HISTORIC RESOURCE STUDY		0.00	75.00	1994 02/11/98
999	BUFF-C-126.000	INTEGRATE "DISCOVERY SITES" INTO HRS		0.00	50.00	1994 02/11/98
999	BUFF-C-130.000	COMPLETE HISTORIC STRUCTURE REPORT, RUSH DISTRI		4.00	80.00	1994 02/12/98
999	BUFF-C-131.000	COMPLETE HISTORIC STRUCTURE REPORT, BEAVER JIM		0.00	30.00	1994 02/11/98
999	BUFF-C-132.000	COMPLETE HISTORIC STRUCTURE REPORT, BOXLEY MILL		0.00	40.00	1994 02/12/98
999	BUFF-C-133.000	COMPLETE PARKER-HICKMAN HISTORIC STRUCTURE REPO		1.00	30.00	1994 02/12/98
999	BUFF-C-142.000	PREPARE CULTURAL LANDSCAPE PLAN, COLLIER HOMEST		0.00	40.00	1994 02/12/98
999	BUFF-C-152.000	PREPARE RIVER COMMUNITIES SPECIAL HISTORY STUDY		0.00	50.00	1994 02/11/98
999	BUFF-C-155.000	PERFORM TREE-RING DATING OF LOG STRUCTURES		5.00	10.00	1994 02/11/98
999	BUFF-C-161.000	PREPARE NATIONAL REGISTER NOM.FOR ERBIE CHURCH		0.00	18.00	1994 02/12/98
999	BUFF-C-170.000	INPUT CULTURAL RESOURCES DATA INTO GIS		0.00	25.00	1994 02/17/98
999	BUFF-C-172.000	IMPLEMENT USE OF LCS DATA		0.00	2.00	1994 02/11/98
999	BUFF-C-174.000	EVALUATE CEMETERIES AS CULTURAL RESOURCES		0.00	20.00	1994 02/12/98
999	BUFF-C-211.000	PREPARE HISTORIC STURCTURE REPORT COLD SPRINGS		0.00	15.00	1994 02/12/98
999	BUFF-C-213.000	PREPARE PRESERVATION GUIDELINES, REAVIS LOG HOU		0.00	10.00	1994 02/12/98
999	BUFF-C-221.000	PRESERVE COLD SPRINGS SCHOOL		0.00	50.00	1994 02/17/98
999	BUFF-C-235.000	MITIGATE AND INTERPRET RUSH MINES		0.00	300.00	1994 02/17/98
999	BUFF-C-250.000	RESTORE COLLIER HOMESTEAD/LANDSCAPE		1.60	17.00	1994 02/12/98
999	BUFF-C-261.000	PRESERVE CCC FURNITURE		0.00	10.00	1994 02/12/98
999	BUFF-C-270.000	PROVIDE ROUTINE MAINT. FOR HISTORIC STRUCTURES		4.50	100.00	1994 02/12/98
999	BUFF-C-320.000	MONITOR HISTORIC RESOURCES		22.00	40.00	1994 02/17/98
999	BUFF-C-360.000	MONITOR PREHISTORIC ARCHEOLOGICAL RESOURCES		5.00	40.00	1994 02/12/98
999	BUFF-C-411.001	NAGPRA CONSULTATIONS		5.00	19.00	1996 02/12/98
999	BUFF-C-411.002	NAGPRA REPATRIATION		0.00	20.00	1996 02/05/98
999	BUFF-C-422.000	DEVELOP ETHNOGRAPHIC DATABASE		0.00	8.00	1994 02/17/98
999	BUFF-C-440.000	CONTINUE ORAL HISTORY PROGRAM		4.20	8.00	1994 03/22/96
999	BUFF-C-445.000	TRANSCRIBE ORAL HISTORY TAPES		4.50	11.00	1994 02/17/98
999	BUFF-C-450.000	CONTINUE VIDEO HISTORY PROJECT		1.80	6.00	1994 02/12/98
999	BUFF-C-472.000	ARCHIVE ORAL HISTORIES		5.50	14.00	1994 02/17/98
999	BUFF-C-500.001	DOCUMENT MUSEUM COLLECTION	CYCLIC CATALOGING	10.00	40.00	1994 02/12/98

continued...

02/17/98  
12:32:49

PROJECT LIST

Page: 0002

PRIORITY	PROJECT NUMBER	PROJECT TITLE	SUB-TITLE	FUNDED	UNFUNDED	PROP YEAR	LAST UPDATE
	1	BUFF-C-500.002	DOCUMENT MUSEUM COLLECTION	0.00	16.00	1994	03/25/96
		BUFF-C-500.003	DOCUMENT MUSEUM COLLECTION	0.00	20.00	1994	03/25/96
999	BUFF-C-501.001	MAINTAIN MUSEUM COLLECTION	PREPARE AN EMERG. OP. PL	0.00	5.00	1994	02/12/98
999	BUFF-C-501.002	MAINTAIN MUSEUM COLLECTION	PREPARE IPM FOR STORAGE	0.00	5.00	1994	02/05/98
999	BUFF-C-501.003	MAINTAIN MUSEUM COLLECTION	CONSTRUCT MUSEUM STORAGE	3.00	75.00	1994	02/12/98
999	BUFF-C-501.004	MAINTAIN MUSEUM COLLECTION	DEVELOP SECURITY & FIRE	0.00	40.00	1994	02/05/98
999	BUFF-C-502.001	PRESERVE MUSEUM COLLECTION	SURVEY OBJECT CONDITION	0.00	8.00	1994	02/05/98
999	BUFF-C-502.002	PRESERVE MUSEUM COLLECTION	TREAT MUSEUM OBJECTS	0.00	35.00	1994	02/05/98
999	BUFF-C-602.000	PREPARE DOE FOR ARCHEOLOGICAL SITES		0.00	20.00	1994	02/05/98
999	BUFF-C-604.001	3NW539 MATERIAL ANALYSIS		0.00	8.00	1996	02/05/98
999	BUFF-C-606.001	SITE VULNERABILITY ASSESSMENTS		5.00	100.00	1996	02/12/98
999	BUFF-C-607.000	ARCHEOLOGICAL SITE STABILIZATION FROM EROSION		0.00	260.00	1998	02/12/98
Resource	Type Sub-total			184.20	3436.00		
0	BUFF-N-112.000	DEVELOP WATER QUALITY BIOMONITORING PROGRAM		85.28	0.00	1995	03/03/95
0	BUFF-N-116.000	MONITOR RAIN/STORM AGRICULTURAL RUNOFF		25.00	0.00	1994	01/27/98
0	BUFF-N-140.000	MONITOR SURVEYED EROSION SITES		35.00	0.00	1992	01/29/98
0	BUFF-N-144.000	CHARACTERIZE LANDUSE OF BUFFALO RIVER WATERSHED		14.10	0.00	1995	03/23/95
0	BUFF-N-160.000	KARST HYDROLOGY; INVENTORY AND DELINEATION		62.40	0.00	1994	02/28/97
0	BUFF-N-220.000	MONITORING ENDANGERED SPECIES; BATS		40.50	0.00	1992	01/29/98
0	BUFF-N-230.000	MONITORING ENDANGERED SPECIES; BALD EAGLE		8.00	0.00	1992	01/29/98
0	BUFF-N-310.000	MANAGE AGRICULTURAL USE PERMITS		78.00	0.00	1992	01/15/98
0	BUFF-N-415.003	ELK MANAGEMENT	WAY-SIDE EXHIBITS	30.00	0.00	1995	01/29/98
0	BUFF-N-511.000	FITTON CAVE MANAGEMENT		35.00	0.00	1992	01/29/98
0	BUFF-N-610.000	AIR QUALITY MONITORING		40.00	0.00	1992	01/27/98
0	BUFF-N-710.001	CONTROL EXOTIC SPECIES/VEGETATION	KUDZU	17.80	0.00	1992	01/29/98
0	BUFF-N-911.000	MONITOR BACKCOUNTRY CAMPSITE IMPACTS		24.00	0.00	1994	01/27/98
1	BUFF-N-120.000	DETERMINE DEPENDENCE OF AQUATIC RESOURCES ON FL		0.00	90.00	1994	01/27/98
2	BUFF-N-415.001	ELK MANAGEMENT	HABITAT & POPULATION RES	0.00	303.00	1994	03/19/96
3	BUFF-N-113.000	DEVELOP WATER RESOURCE MANAGEMENT PLAN		262.00	0.00	1995	01/27/98
4	BUFF-N-100.000	RESOURCE MANAGEMENT; PROGRAM ADMINISTRATION		80.00	180.00	1994	01/27/98
5	BUFF-N-419.003	IMPLEMENT FISHERIES MANAGEMENT PROGRAM	FISHERIES BIOLOGIST STAF	3.50	82.50	1993	01/27/98
6	BUFF-N-810.000	DEVELOP GEOGRAPHIC INFORMATION SYSTEM		0.00	270.00	1994	03/27/95
7	BUFF-N-510.001	CAVE MANAGEMENT	MAPPING AND INVENTORY	0.00	60.00	1992	01/29/98
	BUFF-N-221.000	CONSTRUCT BAT GATES ON RUSH MINE OPENINGS		41.00	801.00	1993	01/29/98
	BUFF-N-512.000	CAVE RESEARCH		0.00	40.00	1994	01/29/98
10	BUFF-N-510.002	CAVE MANAGEMENT	IMPACT MONITORING	0.00	60.00	1992	01/29/98
11	BUFF-N-422.002	NEOTROPICAL MIGRATORY BIRD RESEARCH	POPULATION/HABITAT STUDY	0.00	25.00	1994	03/23/95
12	BUFF-N-420.000	SURVEY STATUS OF HERPETO-FAUNA RESOURCE		2.50	50.00	1994	01/15/98
13	BUFF-N-235.000	DETERMINE STATUS OF CANDIDATE (ENDANGERED) SPEC		9.00	45.00	1995	02/03/98
14	BUFF-N-210.000	INVENTORY ENDANGERED/RARE PLANT SPECIES		0.00	100.00	1994	01/15/98
15	BUFF-N-920.000	MONITOR RIVER USE		0.00	29.50	1994	03/27/95
16	BUFF-N-115.000	SURVEY ALGAL (PERIPHYTON) BIOMASS		0.00	50.00	1994	03/23/95
17	BUFF-N-330.000	LONG-TERM ECOLOGICAL MONITORING, TERRESTRIAL AR		0.00	175.00	1994	03/23/95
18	BUFF-N-419.001	IMPLEMENT FISHERIES MANAGEMENT PROGRAM	MONITOR SMALLMOUTH BASS	0.00	15.00	1996	03/19/96
19	BUFF-N-710.002	CONTROL EXOTIC SPECIES/VEGETATION	MIMOSA	51.80	26.00	1994	01/29/98
20	BUFF-N-340.003	POST OAK SAVANNAH ECOLOGICAL RESTORATION	MONITOR PRESCRIBED FIRE	25.00	5.00	1992	01/29/98
21	BUFF-N-101.000	MANAGE WILDLAND FIRE PROGRAM(SEE N-100.001 FOR		0.00	0.00	1993	01/29/98
22	BUFF-N-110.001	MONITOR WATER QUALITY	PROGRAM SUPPORT	387.00	88.00	1994	01/29/98
23	BUFF-N-340.002	POST OAK SAVANNAH ECOLOGICAL RESTORATION	DESCRIBE PLANT COMMUNITY	15.00	10.00	1993	01/15/98
999	BUFF-N-100.001	MEET CR-MAP PROFILE REQUIREMENTS		0.00	1436.00	1998	01/27/98
999	BUFF-N-110.003	STAFF HYDROLOGIC TECHNICIAN	(SEE N-100.001 FOR FTE)	0.00	0.00	1998	01/29/98
999	BUFF-N-111.000	SURVEY SURFACE WATER FOR GIARDIA		0.00	14.00	1994	03/23/95
999	BUFF-N-114.000	SURVEY FISH FOR BIO-ACCUMULATION OF TOXINS		0.00	17.00	1994	03/23/95
999	BUFF-N-130.000	MAINTAIN FLOOD-WARNING SYSTEM		25.00	45.00	1994	01/29/98
999	BUFF-N-141.000	ASSESSMENT & MONITORING OF STREAM MORPHOLOGY		0.00	280.00	1997	01/27/98
999	BUFF-N-170.000	DEVELOP WATER RESOURCE EDUCATION PROGRAM		42.00	6.00	1993	01/27/98
999	BUFF-N-311.000	PROTECT OPEN FIELDS, GLADES, AND SAVANNAH		84.00	47.00	1998	01/16/98
999	BUFF-N-320.000	FIRE HISTORY RESEARCH		0.00	35.00	1994	03/23/95
999	BUFF-N-410.000	BLACK BEAR POPULATION MONITORING		2.50	7.50	1994	03/23/95
999	BUFF-N-412.000	WHITETAIL DEER MONITORING		0.00	12.00	1994	03/23/95
999	BUFF-N-413.000	DETERMINE INFLUENCE OF BEAVER ON RIPARIAN VEGET		0.00	30.00	1992	03/23/95
999	BUFF-N-414.000	GREAT BLUE HERON; MONITOR NESTING SITES		6.00	8.00	1992	02/03/98
999	BUFF-N-418.000	MONITOR SUCCESS OF RUFFED GROUSE REINTRODUCTION		9.00	8.00	1992	02/03/98
999	BUFF-N-419.002	IMPLEMENT FISHERIES MANAGEMENT PROGRAM	RESTORE CHANNEL CATFISH	43.00	52.00	1995	01/27/98
999	BUFF-N-421.000	MONITOR WILD TURKEY POPULATION		0.00	16.00	1994	03/23/95
999	BUFF-N-510.003	CAVE MANAGEMENT	VISITOR CONTACT AND INFO	0.00	31.00	1992	01/29/98
999	BUFF-N-520.000	PALEONTOLOGY RESOURCES		0.00	24.00	1994	03/23/95
	BUFF-N-720.001	CONTROL EXOTIC SPECIES/ANIMAL	FERAL SWINE	0.00	160.00	1994	01/15/98
	BUFF-N-820.000	DEVELOP RESEARCH FACILITIES		0.00	40.00	1994	03/23/95
999	BUFF-N-921.000	SURVEY PERCEPTIONS OF RIVER USERS		0.00	50.00	1995	03/27/95

continued...



02/17/98  
12:32:49

PROJECT LIST

Page: 0003

PRIORITY	PROJECT NUMBER	PROJECT TITLE	SUB-TITLE	FUNDED	UNFUNDED	PROP LAST YEAR UPDATE
	1	BUFF-N-930.000 WILD & SCENIC RIVER DESIGNATION STUDY		0.00	10.00	1994 03/27/95
		e Type Sub-total-----		1583.38	4833.50	
		Grand Total=====		1767.58	8269.50	

132 projects printed

Active Filter: (No filter)

Output Selections:

Resource types included: CULTURAL/INTEGRATED/NATURAL

Initial fiscal year: 1997

Include projects only if funding data entered

02/17/98  
12:36:49

PROGRAMMING SHEET 1  
CULTURAL/INTEGRATED/NATURAL  
FUNDED ACTIVITIES  
(\$ in thousands)

Page: 0001  
FY: 1997  
Park: BUFF  
Cluster: GPSO

PROJECT NUMBER	PROJECT TITLE	PKG NUM	CULT RES TYPE	SYSTEM- WIDE ISSUE	FUNDING SOURCE	ACT TYP P	T Y P	CURRENT YEAR 1997 \$\$ FTE		OUTYEAR 1 1998 \$\$ FTE		OUTYEAR 2 1999 \$\$ FTE		OUTYEAR 3 2000 \$\$ FTE		TOTAL \$\$ FTE	
114.000 C	INVENTORY AND DOCUMENT CEMETERIES	156	COMB	C53 C10	PKBASE-CR VOL-IN-PK	RES R RES R		0.50 0.10	0.10 0.10	.00 .00	.00 .00	.00 .00	.00 .00	.00 .00	.00 .00	0.50 0.10	0.10 0.10
					Subtotal			0.60	0.20	.00	.00	.00	.00	.00	.00	0.60	0.20
115.000 C	INVENTORY/ASSE SS PARK STRUCTURES/SIT ES		STRC	C53 C36	PKBASE-CR	RES R		1.00	0.10	.00	.00	.00	.00	.00	.00	1.00	0.10
155.000 C	PERFORM TREE-RING DATING OF LOG STRUCTURES		STRC	C57	\$-DONATE	RES O		2.50	0.10	.00	.00	.00	.00	.00	.00	2.50	0.10
222.000 C	PRESERVE ERBIE CHURCH	152	STRC	C54 C55	RG-CR-MTN	MIT O		.00	.00	6.00	0.20	.00	.00	.00	.00	6.00	0.20
250.000 C	RESTORE COLLIER HOMESTEAD/LAND SCAPE	154	COMB	C54 C13	VOL-IN-PK VOL-IN-PK	MIT R MON R		0.20 0.20	0.10 0.10	.00 .00	.00 .00	.00 .00	.00 .00	.00 .00	.00 .00	0.20 0.20	0.10 0.10
					Subtotal			0.40	0.20	.00	.00	.00	.00	.00	.00	0.40	0.20
0 C	PROVIDE ROUTINE MAINT. FOR HISTORIC STRUCTURES		STRC	C55 C85	PKBASE-CR VOL-IN-PK	MIT R MIT R		1.00 0.50	0.10 0.10	.00 .00	.00 .00	.00 .00	.00 .00	.00 .00	.00 .00	1.00 0.50	0.10 0.10
					Subtotal			1.50	0.20	.00	.00	.00	.00	.00	.00	1.50	0.20
320.000 C	MONITOR HISTORIC RESOURCES		COMB	C85 C71	PKBASE-CR	MON R		4.00	0.10	.00	.00	.00	.00	.00	.00	4.00	0.10
321.000 C	MONITOR PRESERVATION WORK, BOXLEY VALLEY	151	COMB	C85 C61	PKBASE-CR TEMP\$-CR TEMP\$-CR	MON R MON R ADM R		2.00 2.00 10.00	0.10 0.10 0.20	.00 .00 .00	.00 .00 .00	.00 .00 .00	.00 .00 .00	.00 .00 .00	.00 .00 .00	2.00 2.00 10.00	0.10 0.10 0.20
					Subtotal			14.00	0.40	.00	.00	.00	.00	.00	.00	14.00	0.40
360.000 C	MONITOR PREHISTORIC ARCHEOLOGICAL RESOURCES	116	SITE	C06 C96	PKBASE-OT	MON R		5.00	0.10	.00	.00	.00	.00	.00	.00	5.00	0.10
411.001 C	NAGPRA CONSULTATIONS		ETHN	N24	PKBASE-CR	MIT R		5.00	0.10	.00	.00	.00	.00	.00	.00	5.00	0.10
440.000 C	CONTINUE ORAL HISTORY PROGRAM		ETHN	C38 C27	PKBASE-CR	RES O		1.00	0.10	.00	.00	.00	.00	.00	.00	1.00	0.10
470.000 C	DEVELOP PARK ARCHIVES	158	OBJC	C41 C91	PKBASE-CR	MIT R		0.50	0.10	.00	.00	.00	.00	.00	.00	0.50	0.10
472.000 C	ARCHIVE ORAL HISTORIES	158	OBJC	C47	PKBASE-CR	MIT R		1.00	0.10	.00	.00	.00	.00	.00	.00	1.00	0.10

continued...

02/17/98  
12:36:49

PROGRAMMING SHEET 1  
CULTURAL/INTEGRATED/NATURAL  
FUNDED ACTIVITIES  
(\$ in thousands)

Page: 0002  
FY: 1997  
Park: BUFF  
Cluster: GPSO

T	PROJECT TITLE	PKG NUM	CULT RES TYPE	SYSTEM- WIDE ISSUE	FUNDING SOURCE	ACT TYP	T Y P	CURRENT YEAR		OUTYEAR 1		OUTYEAR 2		OUTYEAR 3		TOTAL			
								1997		1998		1999		2000					
								\$\$	FTE	\$\$	FTE	\$\$	FTE	\$\$	FTE	\$\$	FTE		
500.001 C	DOCUMENT MUSEUM COLLECTION CYCLIC CATALOGING		OBJC	C46	PKBASE-OT	MIT	R	10.00	0.20	.00	.00	.00	.00	.00	.00	10.00	0.20		
501.003 C	MAINTAIN MUSEUM COLLECTION CONSTRUCT MUSEUM STORAGE		OBJC	C47	RG-CR-MTN	PRO	O	3.00	0.10	.00	.00	.00	.00	.00	.00	3.00	0.10		
501.005 C	MAINTAIN MUSEUM COLLECTION MAINTAIN COLLECTION ENVIR		OBJC	C49	PKBASE-OT	MON	R	3.00	0.10	.00	.00	.00	.00	.00	.00	3.00	0.10		
								=====											
								Project Total		6.00	0.00	0.00		0.00		6.00			
								Project Total		FTE	0.20	0.00		0.00		0.20			
601.001 C	INVENTORY/ASSE SS PREHISTORIC ARCHEOLOGICAL RESOURCE	116	SITE	C01	PKBASE-OT	MON	R	5.00	0.10	.00	.00	.00	.00	.00	.00	5.00	0.10		
1 C	DATA RECOVERY OF LOOTED ARCHEOLOGICAL SITES		SITE	C01 C04	PKBASE-CR	MIT	O	5.00	0.10	.00	.00	.00	.00	.00	.00	5.00	0.10		
606.001 C	SITE VULNERABILITY ASSESSMENTS		SITE	C02 C03	PKBASE-OT	MON	R	5.00	0.10	.00	.00	.00	.00	.00	.00	5.00	0.10		
110.001 N	MONITOR WATER QUALITY PROGRAM SUPPORT		N20	N11	PKBASE-NR	MON	R	60.00	1.00	60.00	1.00	60.00	1.00	60.00	1.00	240.00	4.00		
113.000 N	DEVELOP WATER RESOURCE MANAGEMENT PLAN		N11	N12	ST-LOCAL	ADM	O	.00	.00	76.00	.00	76.00	.00	.00	.00	152.00	0.00		
					PKBASE-NR	ADM	O	.00	.00	30.00	0.50	30.00	0.50	.00	.00	60.00	1.00		
					WATER-RES	ADM	O	.00	.00	24.50	0.70	25.50	0.70	.00	.00	50.00	1.40		
								-----											
								Subtotal		.00	.00	130.50	1.20	131.50	1.20	.00	.00	262.00	2.40
130.000 N	MAINTAIN FLOOD-WARNING SYSTEM		N20	N12	PKBASE-OT	ADM	R	5.00	0.10	5.00	0.10	.00	.00	.00	.00	10.00	0.20		
140.000 N	MONITOR SURVEYED EROSION SITES		N20		PKBASE-NR	MON	R	5.00	0.20	5.00	0.20	.00	.00	.00	.00	10.00	0.40		
160.000 N	KARST HYDROLOGY; INVENTORY AND DELINEATION		N20	N11	WATER-RES	MON	O	25.00	.00	.00	.00	.00	.00	.00	.00	25.00	0.00		
					WATER-RES	ADM	O	5.00	0.10	.00	.00	.00	.00	.00	.00	5.00	0.10		
					PKBASE-NR	ADM	O	1.20	0.05	.00	.00	.00	.00	.00	.00	1.20	0.05		
								-----											
								Subtotal		31.20	0.15	.00	.00	.00	.00	.00	31.20	0.15	
1 N	DEVELOP WATER RESOURCE EDUCATION PROGRAM		N11	N16	TEMP\$-NR	INT	R	1.00	.00	2.00	.00	.00	.00	.00	.00	3.00	0.00		
					PKBASE-NR	INT	R	2.00	0.20	2.00	0.20	.00	.00	.00	.00	4.00	0.40		
								-----											
								Subtotal		3.00	0.20	4.00	0.20	.00	.00	.00	7.00	0.40	

continued...

02/17/98  
12:36:50

PROGRAMMING SHEET 1  
CULTURAL/INTEGRATED/NATURAL  
FUNDED ACTIVITIES  
(\$ in thousands)

Page: 0003  
FY: 1997  
Park: BUFF  
Cluster: GPSO

PROJECT TITLE	PKG NUM	CULT RES TYPE	SYSTEM- WIDE ISSUE	FUNDING SOURCE	ACT TYP P	Y	CURRENT YEAR 1997 \$\$ FTE	OUTYEAR 1 1998 \$\$ FTE	OUTYEAR 2 1999 \$\$ FTE	OUTYEAR 3 2000 \$\$ FTE	TOTAL \$\$ FTE
220.000 MONITORING N ENDANGERED SPECIES; BATS			N02	PKBASE-NR MON R NON-NPS-O MON R			2.00 0.10 2.50 .00	2.00 0.10 2.50 .00	2.00 0.10 2.50 .00	2.00 0.10 2.50 .00	8.00 0.40 10.00 0.00
				Subtotal			4.50 0.10	4.50 0.10	4.50 0.10	4.50 0.10	18.00 0.40
230.000 MONITORING N ENDANGERED SPECIES; BALD EAGLE			N02	PKBASE-NR MON R			1.00 0.10	1.00 0.10	1.00 0.10	.00 .00	3.00 0.30
235.000 DETERMINE N STATUS OF CANDIDATE (ENDANGERED) SPECIES			N02 N17	FED-OTHER RES O			4.50 .00	.00 .00	.00 .00	.00 .00	4.50 0.00
310.000 MANAGE N AGRICULTURAL USE PERMITS			CULL N08	PKBASE-NR ADM R PKBASE-NR PRO R			6.00 0.20 6.00 0.20	6.00 0.20 6.00 0.20	.00 .00 .00 .00	.00 .00 .00 .00	12.00 0.40 12.00 0.40
				Subtotal			12.00 0.40	12.00 0.40	.00 .00	.00 .00	24.00 0.80
311.000 PROTECT OPEN N FIELDS, GLADES, AND SAVANNAH			CULL N17 N06	PKBASE-NR MIT R ST-LOCAL MIT R NON-PROFI MIT R			.00 .00 .00 .00 .00 .00	10.00 0.20 15.00 0.30 3.00 .00	10.00 0.20 15.00 0.30 3.00 .00	10.00 0.20 15.00 0.30 3.00 .00	30.00 0.60 45.00 0.90 9.00 0.00
				Subtotal			.00 .00	28.00 0.50	28.00 0.50	28.00 0.50	84.00 1.50
340.002 POST OAK N SAVANNAH ECOLOGICAL RESTORATION DESCRIBE PLANT COMMUNITY			N07 N17	FED-OTHER MON O ST-LOCAL MON O			.00 .00 .00 .00	5.00 .00 5.00 .00	.00 .00 .00 .00	.00 .00 .00 .00	5.00 0.00 5.00 0.00
				Subtotal			.00 .00	10.00 .00	.00 .00	.00 .00	10.00 0.00
340.003 POST OAK N SAVANNAH ECOLOGICAL RESTORATION MONITOR PRESCRIBED FIRE			N07 N17	FIRE-\$ MON C			5.00 0.10	5.00 0.10	5.00 0.10	.00 .00	15.00 0.30
				Project Total \$\$			5.00	15.00	5.00	0.00	25.00
				Project Total FTE			0.10	0.10	0.10	0.00	0.30
414.000 GREAT BLUE N HERON; MONITOR NESTING SITES			N20	PKBASE-NR MON R			1.00 0.01	.00 .00	.00 .00	.00 .00	1.00 0.01
415.003 ELK N MANAGEMENT WAY-SIDE EXHIBITS			N22	\$-DONATE INT O ST-LOCAL INT O PKBASE-OT INT O			6.00 .00 2.00 .00 2.00 0.05	6.00 .00 2.00 .00 2.00 0.05	.00 .00 .00 .00 .00 .00	.00 .00 .00 .00 .00 .00	12.00 0.00 4.00 0.00 4.00 0.10
				Subtotal			10.00 0.05	10.00 0.05	.00 .00	.00 .00	20.00 0.10
418.000 MONITOR N SUCCESS OF RUFFED GROUSE REINTRODUCTION			N17 N20	PKBASE-NR MON R			1.50 0.10	.00 .00	.00 .00	.00 .00	1.50 0.10

continued...

02/17/98  
12:36:50

PROGRAMMING SHEET 1  
CULTURAL/INTEGRATED/NATURAL  
FUNDED ACTIVITIES  
(\$ in thousands)

Page: 0004  
FY: 1997  
Park: BUFF  
Cluster: GPSO

T	PROJECT TITLE	PKG NUM	CULT RES TYPE	SYSTEM- WIDE ISSUE	FUNDING SOURCE	ACT TYP Y	T P	CURRENT YEAR		OUTYEAR 1		OUTYEAR 2		OUTYEAR 3		TOTAL	
								1997 \$\$	FTE	1998 \$\$	FTE	1999 \$\$	FTE	2000 \$\$	FTE	\$\$	FTE
419.002	IMPLEMENT			N00	NON-PROFI	RES	O	.00	.00	18.00	1.00	.00	.00	.00	.00	18.00	1.00
N	FISHERIES				FED-OTHER	RES	O	.00	.00	15.00	0.50	.00	.00	.00	.00	15.00	0.50
	MANAGEMENT				ST-LOCAL	RES	O	.00	.00	10.00	0.50	.00	.00	.00	.00	10.00	0.50
	PROGRAM																
	RESTORE				Subtotal			.00	.00	43.00	2.00	.00	.00	.00	.00	43.00	2.00
	CHANNEL																
	CATFISH																
511.000	FITTON CAVE			N21 N18	PKBASE-NR	ADM	R	5.00	0.20	5.00	0.20	.00	.00	.00	.00	10.00	0.40
N	MANAGEMENT																
610.000	AIR QUALITY			N14 N20	PKBASE-NR	MON	R	5.00	0.10	5.00	0.10	5.00	0.10	.00	.00	15.00	0.30
N	MONITORING																
710.001	CONTROL			N05	PKBASE-NR	MIT	R	1.50	0.10	1.50	0.10	1.50	0.10	.00	.00	4.50	0.30
N	EXOTIC				PKBASE-NR	MON	R	0.50	0.10	0.50	0.10	0.50	0.10	.00	.00	1.50	0.30
	SPECIES/VEGETA																
	TION				Subtotal			2.00	0.20	2.00	0.20	2.00	0.20	.00	.00	6.00	0.60
	KUDZU																
710.002	CONTROL			N05	RG-RM-NAT	MIT	R	0.60	0.01	.00	.00	.00	.00	.00	.00	0.60	0.01
N	EXOTIC				PKBASE-NR	MIT	R	.00	.00	10.00	0.30	10.00	0.30	10.00	0.30	30.00	0.90
	SPECIES/VEGETA																
	TION				Subtotal			0.60	0.01	10.00	0.30	10.00	0.30	10.00	0.30	30.60	0.91
	MIMOSA																
					Project Total	\$\$		2.60		12.00		12.00		10.00		36.60	
					Project Total	FTE		0.21		0.50		0.50		0.30		1.51	
	0 MONITOR			N18	PKBASE-NR	MON	C	3.00	0.10	3.00	0.10	3.00	0.10	3.00	0.10	12.00	0.40
	BACKCOUNTRY																
	CAMPSITE																
	IMPACTS																
41 projects printed					Grand Total	\$\$		226.80		349.00		250.00		105.50		931.30	
					Grand Total	FTE		5.62		7.05		3.70		2.00		18.37	

Active Filter: (No filter)

Output Selections:

Resource types included: CULTURAL/INTEGRATED/NATURAL

Initial fiscal year: 1996

by PROJECT within each park and type

only projects only if funding data entered

02/17/98

12:37:22

PROGRAMMING SHEET 2  
CULTURAL/INTEGRATED/NATURAL  
UNFUNDED ACTIVITIES  
(\$ in thousands)

Page: 0001

FY: 1996

Park: BUFF

Cluster: GPSO

PK	PROJECT	PROJECT TITLE	PKG	CULT	SYSTEM-	ACT	T	CURRENT YEAR		OUTYEAR 1		OUTYEAR 2		OUTYEAR 3		TOTAL	
PRI	NUMBER		NUM	RES	WIDE	TYP	Y	1996		1997		1998		1999		\$\$	FTE
				TYPE	ISSUE		P	\$\$	FTE	\$\$	FTE	\$\$	FTE	\$\$	FTE	\$\$	FTE
3	110.000	PREPARE ADMINSTRATIVE HISTORY	150	COMB	C37	RES	O	40.00	0.20	25.00	0.20	.00	.00	.00	.00	65.00	0.40
999	111.001	ARCHEOLOGY VIDEO AND EXHIBIT		CULL	C39	INT	O	10.00	0.20	.00	.00	.00	.00	.00	.00	10.00	0.20
999	112.000	ASSESS CULTURAL RESOURCES IN WILDERNESS UNITS		COMB	C02 C53	RES	O	15.00	0.50	5.00	0.20	.00	.00	.00	.00	20.00	0.70
15	114.000	INVENTORY AND DOCUMENT CEMETERIES	156	COMB	C53 C10	RES	O	10.00	0.30	10.00	0.30	10.00	0.30	.00	.00	30.00	0.90
999	115.000	INVENTORY/ASSESS PARK STRUCTURES/SITES		STRC	C53 C36	RES	R	4.00	0.10	4.00	0.10	4.00	0.10	4.00	0.10	16.00	0.40
						RES	O	5.00	0.10	5.00	0.10	5.00	0.10	5.00	0.10	20.00	0.40
		Subtotal						9.00	0.20	9.00	0.20	9.00	0.20	9.00	0.20	36.00	0.80
1	121.000	PREPARE PARKWIDE HISTORIC RESOURCE STUDY	149	COMB	C35 C63	RES	O	25.00	0.20	25.00	0.20	25.00	0.20	.00	.00	75.00	0.60
9	122.000	PREPARE RUSH HISTORIC RESOURCE STUDY		COMB	C35 C71	RES	O	75.00	0.20	.00	.00	.00	.00	.00	.00	75.00	0.20
999	126.000	INTEGRATE "DISCOVERY SITES" INTO HRS		COMB	C38 C02	RES	O	30.00	0.20	20.00	0.20	.00	.00	.00	.00	50.00	0.40
999	130.000	COMPLETE HISTORIC STRUCTURE REPORT, RUSH DISTRICT	170	STRC	C52 C70	RES	O	40.00	0.20	40.00	0.20	.00	.00	.00	.00	80.00	0.40
999	131.000	COMPLETE HISTORIC STRUCTURE REPORT, BEAVER JIM FARM	170	STRC	C52	RES	O	20.00	0.20	10.00	0.10	.00	.00	.00	.00	30.00	0.30
999	132.000	COMPLETE HISTORIC STRUCTURE REPORT, BOXLEY MILL	170	STRC	C52 C61	RES	O	40.00	0.20	.00	.00	.00	.00	.00	.00	40.00	0.20
999	133.000	COMPLETE PARKER-HICKMAN HISTORIC STRUCTURE REPORT	170	STRC	C52	RES	O	30.00	0.20	.00	.00	.00	.00	.00	.00	30.00	0.20
11	134.000	PREPARE HISTORIC STRUCTURE REPORT COLLIER HOMESTEAD	154	STRC	C52 C71	RES	O	20.00	0.20	10.00	0.10	.00	.00	.00	.00	30.00	0.30
9	135.000	PREPARE CCC STRUCTURES HSR	153	STRC	C52 C71	RES	O	45.00	0.30	15.00	0.10	.00	.00	.00	.00	60.00	0.40
	5.000	PREPARE HISTORIC STRUCTURE REPORT, ERBIE CHURCH	152	STRC	C52	RES	O	.00	.00	.00	.00	15.00	0.10	.00	.00	15.00	0.10

continued...

02/17/98  
12:37:23

PROGRAMMING SHEET 2  
CULTURAL/INTEGRATED/NATURAL  
UNFUNDED ACTIVITIES  
(\$ in thousands)

Page: 0002  
FY: 1996  
Park: BUFF  
Cluster: GPSO

PROJECT NUMBER	PROJECT TITLE	PKG NUM	CULT RES TYPE	SYSTEM- WIDE ISSUE	ACT TYP Y	T P	CURRENT YEAR 1996 \$\$ FTE	OUTYEAR 1 1997 \$\$ FTE	OUTYEAR 2 1998 \$\$ FTE	OUTYEAR 3 1999 \$\$ FTE	TOTAL \$\$ FTE
13 141.000 C	PREPARE CULTURAL LANDSCAPE INVENTORY	155	CULL	C10 C63	RES	O	2.00 0.10	2.00 0.10	.00 .00	.00 .00	4.00 0.20
999 142.000 C	PREPARE CULTURAL LANDSCAPE PLAN, COLLIER HOMESTEAD	155	CULL	C11	RES	O	40.00 0.20	.00 .00	.00 .00	.00 .00	40.00 0.20
25 151.000 C	PREPARE CIVIL WAR SITES SPECIAL HISTORY STUDY	132	COMB	C38 C63	RES	O	40.00 0.20	.00 .00	.00 .00	.00 .00	40.00 0.20
999 152.000 C	PREPARE RIVER COMMUNITIES SPECIAL HISTORY STUDY		COMB	C38 C02	RES	O	30.00 0.20	20.00 0.20	.00 .00	.00 .00	50.00 0.40
999 155.000 C	PERFORM TREE-RING DATING OF LOG STRUCTURES		STRC	C57	RES	O	5.00 0.10	5.00 0.10	.00 .00	.00 .00	10.00 0.20
999 161.000 C	PREPARE NATIONAL REGISTER NOM.FOR ERBIE CHURCH	152	STRC	C36	RES	O	18.00 0.20	.00 .00	.00 .00	.00 .00	18.00 0.20
21 162.000 C	PREPARE NATL REGISTER NOMINATION, COLLIER HOMESTEAD	154	COMB	C36	RES	O	20.00 0.20	.00 .00	.00 .00	.00 .00	20.00 0.20
999 170.000 C	INPUT CULTURAL RESOURCES DATA INTO GIS		COMB	C62	RES	O	10.00 0.20	5.00 0.10	5.00 0.10	5.00 0.10	25.00 0.50
999 172.000 C	IMPLEMENT USE OF LCS DATA		STRC	C51	RES	O	2.00 0.10	.00 .00	.00 .00	.00 .00	2.00 0.10
26 173.000 C	PREPARE HISTORIC FURNISHING STUDY, CCC CABINS	153	OBJC	C44	RES	O	30.00 0.20	.00 .00	.00 .00	.00 .00	30.00 0.20
999 174.000 C	EVALUATE CEMETERIES AS CULTURAL RESOURCES	156	COMB	C70 C22	RES	O	10.00 0.10	10.00 0.10	.00 .00	.00 .00	20.00 0.20
23 181.000 C	DOCUMENT RUSH HISTORIC DISTRICT TO HAER STANDARDS		CULL	C63 C57	RES	O	40.00 1.00	40.00 1.00	40.00 1.00	.00 .00	120.00 3.00
999 211.000 C	PREPARE HISTORIC STURCTURE REPORT COLD SPRINGS SCHO		STRC	C57 C55	RES	O	15.00 0.20	.00 .00	.00 .00	.00 .00	15.00 0.20
17 212.000 C	PREPARE PARKER-HICKMAN PRESERVATION GUIDELINES	157	STRC	C55 C57	MIT	O	10.00 0.20	.00 .00	.00 .00	.00 .00	10.00 0.20
999 213.000 C	PREPARE PRESERVATION GUIDELINES, REAVIS LOG HOUSE		STRC	C57 C55	RES	O	10.00 0.10	.00 .00	.00 .00	.00 .00	10.00 0.10
999 221.000 C	PRESERVE COLD SPRINGS SCHOOL		STRC	C54	MIT	O	20.00 0.50	20.00 0.50	10.00 0.20	.00 .00	50.00 1.20
999 222.000 C	PRESERVE ERBIE CHURCH	152	STRC	C54 C55	MIT	C	20.00 0.50	15.00 0.50	5.00 0.10	.00 .00	40.00 1.10

continued...

02/17/98  
12:37:24

PROGRAMMING SHEET 2  
CULTURAL/INTEGRATED/NATURAL  
UNFUNDED ACTIVITIES  
(\$ in thousands)

Page: 0003  
FY: 1996  
Park: BUFF  
Cluster: GPSO

PROJECT NUMBER	PROJECT TITLE	PKG NUM	CULT RES TYPE	SYSTEM WIDE ISSUE	ACT TYP Y P	CURRENT YEAR 1996 \$\$ FTE	OUTYEAR 1 1997 \$\$ FTE	OUTYEAR 2 1998 \$\$ FTE	OUTYEAR 3 1999 \$\$ FTE	TOTAL \$\$ FTE
27 231.000 C	PRESERVE CCC STRUCTURES	153	STRC	C56 C85	ADM R MIT C	10.00 0.20 20.00 0.50	5.00 0.10 15.00 0.30	5.00 0.10 10.00 0.20	5.00 0.10 10.00 0.20	25.00 0.50 55.00 1.20
	Subtotal					30.00 0.70	20.00 0.40	15.00 0.30	15.00 0.30	80.00 1.70
999 235.000 C	MITIGATE AND INTERPRET RUSH MINES		STRC	C54 C72	MIT O	100.00 1.00	100.00 1.00	100.00 1.00	.00 .00	300.00 3.00
999 250.000 C	RESTORE COLLIER HOMESTEAD/LANDSCAPE	154	COMB	C54 C13	MIT O MIT R	10.00 0.20 1.00 0.05	5.00 0.20 1.00 0.05	.00 .00 .00 .00	.00 .00 .00 .00	15.00 0.40 2.00 0.10
	Subtotal					11.00 0.25	6.00 0.25	.00 .00	.00 .00	17.00 0.50
999 261.000 C	PRESERVE CCC FURNITURE	153	OBJC	C48	MIT C	4.00 0.10	2.00 0.10	2.00 0.10	2.00 0.10	10.00 0.40
999 270.000 C	PROVIDE ROUTINE MAINT. FOR HISTORIC STRUCTURES		STRC	C55 C85	MIT R	40.00 1.00	20.00 0.50	20.00 0.50	20.00 0.50	100.00 2.50
999 320.000 C	MONITOR HISTORIC RESOURCES		COMB	C85 C71	MON R	10.00 0.20	10.00 0.20	10.00 0.20	10.00 0.20	40.00 0.80
29 321.000 C	MONITOR PRESERVATION WORK, BOXLEY VALLEY	151	COMB	C85 C61	MON R ADM R	10.00 0.50 10.00 0.20	10.00 0.50 10.00 0.20	10.00 0.50 10.00 0.20	15.00 0.50 10.00 0.20	45.00 2.00 40.00 0.80
	Subtotal					20.00 0.70	20.00 0.70	20.00 0.70	25.00 0.70	85.00 2.80
999 360.000 C	MONITOR PREHISTORIC ARCHEOLOGICAL RESOURCES	116	SITE	C06 C96	MON C	10.00 0.20	10.00 0.20	10.00 0.20	10.00 0.20	40.00 0.80
24 410.000 C	PREPARE ETHNOGRAPHIC OVERVIEW		ETHN	C21 C29	RES O	20.00 0.30	20.00 0.10	.00 .00	.00 .00	40.00 0.40
2 410.001 C	NATIVE AMERICAN ETHNOGRAPHY OF THE BUFFALO RIVER VY		ETHN	C21	RES O	.00 .00	.00 .00	75.00 0.20	.00 .00	75.00 0.20
	Project Total					20.00	20.00	75.00	0.00	115.00
	Project Total FTE					0.30	0.10	0.20	0.00	0.60
999 411.001 C	NAGPRA CONSULTATIONS		ETHN	N24	ADM O	7.00 0.20	4.00 0.10	4.00 0.10	4.00 0.10	19.00 0.50
999 411.002 C	NAGPRA REPATRIATION		ETHN	C25	MIT O	5.00 0.10	5.00 0.10	5.00 0.10	5.00 0.10	20.00 0.40
6 411.003 C	CULTURAL AFFILIATIONS STUDIES		COMB	C25	RES O	.00 .00	.00 .00	50.00 0.10	.00 .00	50.00 0.10
8 411.004 C	CONSULTATION WITH THE CHEROKEE AND KEETOWAH CHEROKE		COMB	C30	RES O	.00 .00	.00 .00	20.00 0.20	10.00 0.10	30.00 0.30
	Project Total					12.00	9.00	79.00	19.00	119.00
	Project Total FTE					0.30	0.20	0.50	0.30	1.30
999 422.000 C	DEVELOP ETHNOGRAPHIC DATABASE		ETHN	C26 C28	RES O	2.00 0.10	2.00 0.10	2.00 0.10	2.00 0.10	8.00 0.40

continued...



02/17/98  
12:37:25

PROGRAMMING SHEET 2  
CULTURAL/INTEGRATED/NATURAL  
UNFUNDED ACTIVITIES  
(\$ in thousands)

Page: 0004  
FY: 1996  
Park: BUFF  
Cluster: GPSO

PROJECT NUMBER	PROJECT TITLE	PKG NUM	CULT RES TYPE	SYSTEM- WIDE ISSUE	ACT TYP Y	T P	CURRENT YEAR 1996 \$\$ FTE	OUTYEAR 1 1997 \$\$ FTE	OUTYEAR 2 1998 \$\$ FTE	OUTYEAR 3 1999 \$\$ FTE	TOTAL \$\$ FTE
999 440.000 C	CONTINUE ORAL HISTORY PROGRAM		ETHN	C38 C27	RES	O	2.00 0.10	2.00 0.10	2.00 0.10	2.00 0.10	8.00 0.40
999 445.000 C	TRANSCRIBE ORAL HISTORY TAPES		ETHN	C27	MIT	O	5.00 0.10	2.00 0.10	2.00 0.10	2.00 0.10	11.00 0.40
999 450.000 C	CONTINUE VIDEO HISTORY PROJECT		ETHN	C38 C27	RES	O	4.00 0.10	2.00 0.10	.00 .00	.00 .00	6.00 0.20
28 470.000 C	DEVELOP PARK ARCHIVES	158	OBJC	C41 C91	MIT	C	5.00 0.20	1.00 0.10	1.00 0.10	1.00 0.10	8.00 0.50
999 472.000 C	ARCHIVE ORAL HISTORIES	158	OBJC	C47	MIT	R	1.00 0.05	1.00 0.05	1.00 0.05	1.00 0.05	4.00 0.20
					MIT	O	4.00 0.20	2.00 0.10	2.00 0.10	2.00 0.10	10.00 0.50
	Subtotal						5.00 0.25	3.00 0.15	3.00 0.15	3.00 0.15	14.00 0.70
999 500.001 C	DOCUMENT MUSEUM COLLECTION CYCLIC CATALOGING		OBJC	C46	MIT	R	10.00 0.40	10.00 0.40	10.00 0.40	10.00 0.40	40.00 1.60
999 500.002 C	DOCUMENT MUSEUM COLLECTION PHOTOGRAPH MUSEUM OBJECTS		OBJC	C46 C28	MON	C	10.00 0.40	2.00 0.10	2.00 0.10	2.00 0.10	16.00 0.70
999 500.003 C	DOCUMENT MUSEUM COLLECTION CONVERT RECORDS TO ANCS		OBJC	C46	RES	C	5.00 0.10	5.00 0.10	5.00 0.10	5.00 0.10	20.00 0.40
0.004	SITE FILES		CULL	C02	ADM	O	10.00 0.20	.00 .00	.00 .00	.00 .00	10.00 0.20
	TRANSFERRED TO ASMIS DATABASE				ADM	C	.00 .00	4.00 0.10	4.00 0.10	4.00 0.10	12.00 0.30
	Subtotal						10.00 0.20	4.00 0.10	4.00 0.10	4.00 0.10	22.00 0.50
16 500.005 C	BACKLOG CATALOGGING FOR HERBARIUM		OBJC	C46	RES	O	.00 .00	.00 .00	6.00 0.20	.00 .00	6.00 0.20
							=====				
Project Total \$\$							35.00	21.00	27.00	21.00	104.00
Project Total FTE							1.10	0.70	0.90	0.70	3.40
999 501.001 C	MAINTAIN MUSEUM COLLECTION PREPARE AN EMERG. OP. PLA		OBJC	C50	PRO	O	5.00 0.20	.00 .00	.00 .00	.00 .00	5.00 0.20
999 501.002 C	MAINTAIN MUSEUM COLLECTION PREPARE IPM FOR STORAGE		COMB	C49	PRO	O	5.00 0.10	.00 .00	.00 .00	.00 .00	5.00 0.10
999 501.003 C	MAINTAIN MUSEUM COLLECTION CONSTRUCT MUSEUM STORAGE		OBJC	C47	PRO	O	65.00 1.10	10.00 0.20	.00 .00	.00 .00	75.00 1.30
999 501.004 C	MAINTAIN MUSEUM COLLECTION DEVELOP SECURITY & FIRE		OBJC	C50	PRO	O	30.00 0.20	10.00 0.20	.00 .00	.00 .00	40.00 0.40
							=====				
Project Total \$\$							105.00	20.00	0.00	0.00	125.00
Project Total FTE							1.60	0.40	0.00	0.00	2.00

continued...

02/17/98  
12:37:26

PROGRAMMING SHEET 2  
CULTURAL/INTEGRATED/NATURAL  
UNFUNDED ACTIVITIES  
(\$ in thousands)

Page: 0005  
FY: 1996  
Park: BUFF  
Cluster: GPSO

PROJECT NUMBER	PROJECT TITLE	PKG NUM	CULT RES TYPE	SYSTEM- WIDE ISSUE	ACT TYP P	T Y	CURRENT YEAR 1996 \$\$ FTE	OUTYEAR 1 1997 \$\$ FTE	OUTYEAR 2 1998 \$\$ FTE	OUTYEAR 3 1999 \$\$ FTE	TOTAL \$\$ FTE
999 502.001 C	PRESERVE MUSEUM COLLECTION SURVEY OBJECT CONDITION		OBJC	C43	MON	O	8.00 0.20	.00 .00	.00 .00	.00 .00	8.00 0.20
999 502.002 C	PRESERVE MUSEUM COLLECTION TREAT MUSEUM OBJECTS		OBJC	C43 C48	MIT	O	25.00 0.30	.00 .00	.00 .00	.00 .00	25.00 0.30
					MIT	R	.00 .00	10.00 0.20	.00 .00	.00 .00	10.00 0.20
							Subtotal	25.00 0.30	10.00 0.20	.00 .00	35.00 0.50
							Project Total \$\$	33.00	10.00	0.00	43.00
							Project Total FTE	0.50	0.20	0.00	0.70
18 601.001 C	INVENTORY/ASSESS PREHISTORIC ARCHEOLOGICAL RESOURCE	116	SITE	C01	RES	R	160.00 4.00	80.00 3.00	80.00 3.00	80.00 3.00	400.00 13.00
20 601.002 C	INVENTORY/ASSESS HISTORIC ARCHEOLOGICAL RESOURCES		SITE	C01	PRO	R	25.00 0.30	25.00 0.30	25.00 0.30	25.00 0.30	100.00 1.20
							Project Total \$\$	185.00	105.00	105.00	500.00
							Project Total FTE	4.30	3.30	3.30	14.20
999 602.000 C	PREPARE DOE FOR ARCHEOLOGICAL SITES	116	SITE	C02	RES	C	10.00 0.20	5.00 0.10	5.00 0.10	.00 .00	20.00 0.40
3.000	INVENTORY AND PROTECT CAVE ARCHEOLOGY		SITE	C02 C07	RES	R	10.00 0.10	10.00 0.10	10.00 0.10	10.00 0.10	40.00 0.40
999 604.001 C	3NW539 MATERIAL ANALYSIS		SITE	C02 C03	MIT	O	8.00 0.10	.00 .00	.00 .00	.00 .00	8.00 0.10
10 604.002 C	ARTIFACT ANALYSIS AND REPORT WRITING		COMB	C02	RES	O	.00 .00	.00 .00	10.00 0.10	15.00 0.10	25.00 0.20
							Project Total \$\$	8.00	0.00	10.00	33.00
							Project Total FTE	0.10	0.00	0.10	0.30
12 605.001 C	DATA RECOVERY OF LOOTED ARCHEOLOGICAL SITES		SITE	C01 C04	MIT	R	25.00 0.30	25.00 0.30	25.00 0.30	25.00 0.30	100.00 1.20
999 606.001 C	SITE VULNERABILITY ASSESSMENTS		SITE	C02 C03	MON	C	25.00 0.20	25.00 0.20	25.00 0.20	25.00 0.20	100.00 0.80
999 607.000 C	ARCHEOLOGICAL SITE STABILIZATION FROM EROSION		SITE	C05	MIT	O	.00 .00	.00 .00	75.00 1.00	75.00 1.00	150.00 2.00
4 100.000 N	RESOURCE MANAGEMENT; PROGRAM ADMINISTRATION		COMB	N24 C83	ADM	R	45.00 1.00	45.00 1.00	45.00 1.00	45.00 1.00	180.00 4.00
999 100.001 N	MEET CR-MAP PROFILE REQUIREMENTS		N24	C86	MON	R	.00 .00	.00 .00	359.00 7.00	359.00 7.00	718.00 14.00
							Project Total \$\$	45.00	45.00	404.00	898.00
							Project Total FTE	1.00	1.00	8.00	18.00

continued...

02/17/98  
12:37:27

PROGRAMMING SHEET 2  
CULTURAL/INTEGRATED/NATURAL  
UNFUNDED ACTIVITIES  
(\$ in thousands)

Page: 0006  
FY: 1996  
Park: BUFF  
Cluster: GPSO

PROJECT NUMBER	PROJECT TITLE	PKG NUM	CULT RES TYPE	SYSTEM- WIDE ISSUE	ACT TYP P	T Y	CURRENT YEAR 1996 \$\$ FTE		OUTYEAR 1 1997 \$\$ FTE		OUTYEAR 2 1998 \$\$ FTE		OUTYEAR 3 1999 \$\$ FTE		TOTAL \$\$ FTE	
22 N	110.001 MONITOR WATER QUALITY PROGRAM SUPPORT			N20 N11	PRO R		22.00	.00	22.00	.00	22.00	.00	22.00	.00	88.00	0.00
999 N	111.000 SURVEY SURFACE WATER FOR GIARDIA			N20 N18	MON O MON C		10.00	.00	.00	.00	.00	.00	.00	.00	10.00	0.00
							.00	.00	4.00	0.10	.00	.00	.00	.00	4.00	0.10
	Subtotal						10.00	.00	4.00	0.10	.00	.00	.00	.00	14.00	0.10
999 N	114.000 SURVEY FISH FOR BIO-ACCUMULATION OF TOXINS			N20 N11	RES O		17.00	0.10	.00	.00	.00	.00	.00	.00	17.00	0.10
16 N	115.000 SURVEY ALGAL (PERIPHYTON) BIOMASS			N20 N11	RES O		25.00	0.10	25.00	0.10	.00	.00	.00	.00	50.00	0.20
1 N	120.000 DETERMINE DEPENDENCE OF AQUATIC RESOURCES ON FLOWS			N20 N13	RES O		30.00	0.10	30.00	0.10	30.00	0.10	.00	.00	90.00	0.30
999 N	130.000 MAINTAIN FLOOD-WARNING SYSTEM			N20 N12	ADM R		15.00	0.20	10.00	0.20	10.00	0.20	10.00	0.20	45.00	0.80
999 N	141.000 ASSESSMENT & MONITORING OF STREAM MORPHOLOGY			N11 N12	RES O		.00	.00	70.00	0.80	70.00	0.80	70.00	0.80	210.00	2.40
	0.000 DEVELOP WATER RESOURCE EDUCATION PROGRAM			N11 N16	INT R		.00	.00	.00	.00	3.00	.00	3.00	.00	6.00	0.00
14 N	210.000 INVENTORY ENDANGERED/RARE PLANT SPECIES			N03 N20	RES O		25.00	.00	25.00	.00	25.00	.00	25.00	.00	100.00	0.00
8 N	221.000 CONSTRUCT BAT GATES ON RUSH MINE OPENINGS			N02 N10	MIT O		267.00	7.00	267.00	7.00	267.00	7.00	.00	.00	801.00	21.00
13 N	235.000 DETERMINE STATUS OF CANDIDATE (ENDANGERED) SPECIES			N02 N17	MON R RES O		5.00	0.20	5.00	0.20	5.00	0.20	5.00	0.20	20.00	0.80
							25.00	.00	.00	.00	.00	.00	.00	.00	25.00	0.00
	Subtotal						30.00	0.20	5.00	0.20	5.00	0.20	5.00	0.20	45.00	0.80
999 N	311.000 PROTECT OPEN FIELDS, GLADES, AND SAVANNAH			CULL N17 N06	MIT R		.00	.00	.00	.00	23.50	3.00	23.50	3.00	47.00	6.00
999 N	320.000 FIRE HISTORY RESEARCH			N07 N20	RES O MON C		15.00	.00	15.00	.00	.00	.00	.00	.00	30.00	0.00
							.00	.00	.00	.00	.00	.00	5.00	0.20	5.00	0.20
	Subtotal						15.00	.00	15.00	.00	.00	.00	5.00	0.20	35.00	0.20
17 N	330.000 LONG-TERM ECOLOGICAL MONITORING, TERRESTRIAL AREA			N17 N20	RES O MON C		25.00	.00	25.00	.00	50.00	0.50	50.00	0.50	150.00	1.00
							.00	.00	.00	.00	.00	.00	25.00	1.00	25.00	1.00
	Subtotal						25.00	.00	25.00	.00	50.00	0.50	75.00	1.50	175.00	2.00
23 N	340.002 POST OAK SAVANNAH ECOLOGICAL RESTORATION DESCRIBE PLANT COMMUNITY			N07 N17	MON O		10.00	.00	.00	.00	.00	.00	.00	.00	10.00	0.00

continued...

02/17/98  
12:37:28

PROGRAMMING SHEET 2  
CULTURAL/INTEGRATED/NATURAL  
UNFUNDED ACTIVITIES  
(\$ in thousands)

Page: 0007  
FY: 1996  
Park: BUFF  
Cluster: GPSO

PROJECT MBER	PROJECT TITLE	PKG NUM	CULT RES TYPE	SYSTEM- WIDE ISSUE	ACT TYP P	T Y	CURRENT YEAR 1996 \$\$ FTE		OUTYEAR 1 1997 \$\$ FTE		OUTYEAR 2 1998 \$\$ FTE		OUTYEAR 3 1999 \$\$ FTE		TOTAL \$\$ FTE	
20 340.003 N	POST OAK SAVANNAH ECOLOGICAL RESTORATION MONITOR PRESCRIBED FIRE			N07 N17	MON	C	.00	.00	.00	.00	.00	.00	5.00	0.10	5.00	0.10
							=====									
							Project Total	\$\$	10.00	0.00	0.00	0.00	5.00		15.00	
							Project Total	FTE	0.00	0.00	0.00	0.00	0.10		0.10	
999 410.000 N	BLACK BEAR POPULATION MONITORING			N20	MON	R	2.50	0.10	2.50	0.10	2.50	0.10	.00	.00	7.50	0.30
999 412.000 N	WHITETAIL DEER MONITORING			N19 N20	MON	R	2.00	0.10	1.50	0.10	2.00	0.20	1.50	0.10	7.00	0.50
							RES	O	5.00	.00	.00	.00	.00	.00	5.00	0.00
							Subtotal		7.00	0.10	1.50	0.10	2.00	0.20	12.00	0.50
999 413.000 N	DETERMINE INFLUENCE OF BEAVER ON RIPARIAN VEGET.			N20 N01	RES	O	15.00	.00	15.00	.00	.00	.00	.00	.00	30.00	0.00
999 414.000 N	GREAT BLUE HERON; MONITOR NESTING SITES			N20	MON	R	2.00	0.01	2.00	0.01	2.00	0.01	2.00	0.01	8.00	0.04
2 415.001 N	ELK MANAGEMENT HABITAT & POPULATION RES.			N20 N08	ADM	O	4.00	0.10	4.00	0.10	4.00	0.10	.00	.00	12.00	0.30
							MON	O	45.00	.00	123.00	.00	123.00	.00	291.00	0.00
							Subtotal		49.00	0.10	127.00	0.10	127.00	0.10	303.00	0.30
9 418.000 N	MONITOR SUCCESS OF RUFFED GROUSE REINTRODUCTION			N17 N20	MON	R	2.00	0.01	2.00	0.01	2.00	0.01	2.00	0.01	8.00	0.04
18 419.001 N	IMPLEMENT FISHERIES MANAGEMENT PROGRAM MONITOR SMALLMOUTH BASS			N00 N19	MON	C	7.50	0.10	.00	.00	7.50	0.10	.00	.00	15.00	0.20
999 419.002 N	IMPLEMENT FISHERIES MANAGEMENT PROGRAM RESTORE CHANNEL CATFISH			N00	RES	R	13.00	.00	13.00	.00	13.00	.00	13.00	.00	52.00	0.00
5 419.003 N	IMPLEMENT FISHERIES MANAGEMENT PROGRAM FISHERIES BIOLOGIST STAFF	238		N19 N00	MON	C	30.00	0.30	10.00	0.10	10.00	0.10	.00	.00	50.00	0.50
							RES	O	7.50	.00	25.00	0.20	.00	.00	32.50	0.20
							Subtotal		37.50	0.30	35.00	0.30	10.00	0.10	82.50	0.70
							=====									
							Project Total	\$\$	58.00	48.00	30.50		13.00		149.50	
							Project Total	FTE	0.40	0.30	0.20		0.00		0.90	
12 420.000 N	SURVEY STATUS OF HERPETO-FAUNA RESOURCE			N20 N02	RES	O	25.00	.00	25.00	.00	.00	.00	.00	.00	50.00	0.00
999 421.000 N	MONITOR WILD TURKEY POPULATION			N20	MON	R	4.00	0.10	4.00	0.10	4.00	0.10	4.00	0.10	16.00	0.40
11 422.002 N	NEOTROPICAL MIGRATORY BIRD RESEARCH POPULATION/HABITAT STUDY			N20 N02	RES	O	8.00	0.10	8.00	0.10	9.00	0.10	.00	.00	25.00	0.30

continued...

02/17/98  
12:37:28

PROGRAMMING SHEET 2  
CULTURAL/INTEGRATED/NATURAL  
UNFUNDED ACTIVITIES  
(\$ in thousands)

Page: 0008  
FY: 1996  
Park: BUFF  
Cluster: GPSO

PROJECT MBER	PROJECT TITLE	PKG NUM	CULT RES TYPE	SYSTEM- WIDE ISSUE	ACT TYP P	T	CURRENT YEAR		OUTYEAR 1		OUTYEAR 2		OUTYEAR 3		TOTAL	
							1996 \$\$	FTE	1997 \$\$	FTE	1998 \$\$	FTE	1999 \$\$	FTE	\$\$	FTE
7 510.001 N	CAVE MANAGEMENT MAPPING AND INVENTORY			N20 N02	MON R		15.00	0.20	15.00	0.20	15.00	0.20	15.00	0.20	60.00	0.80
10 510.002 N	CAVE MANAGEMENT IMPACT MONITORING			N21 C19	MON R		15.00	0.20	15.00	0.20	15.00	0.20	15.00	0.20	60.00	0.80
999 510.003 N	CAVE MANAGEMENT VISITOR CONTACT AND INFO			N21 N18	MON R		10.00	0.50	7.00	0.30	7.00	0.30	7.00	0.30	31.00	1.40
Project Total \$\$							40.00		37.00		37.00		37.00		151.00	
Project Total FTE							0.90		0.70		0.70		0.70		3.00	
9 512.000 N	CAVE RESEARCH			N20	RES O		10.00	.00	10.00	.00	10.00	.00	10.00	.00	40.00	0.00
999 520.000 N	PALEONTOLOGY RESOURCES			N20 N23	RES O		8.00	.00	8.00	.00	8.00	.00	.00	.00	24.00	0.00
19 710.002 N	CONTROL EXOTIC SPECIES/VEGETATION MIMOSA			N05	RES R MIT R		4.00 .00	0.20 .00	.00 2.00	.00 0.10	.00 10.00	.00 0.50	.00 10.00	.00 0.50	4.00 22.00	0.20 1.10
Subtotal							4.00	0.20	2.00	0.10	10.00	0.50	10.00	0.50	26.00	1.30
999 720.001 N	CONTROL EXOTIC SPECIES/ANIMAL FERAL SWINE			N04	MIT R		40.00	2.00	40.00	2.00	40.00	2.00	40.00	2.00	160.00	8.00
0.000	DEVELOP GEOGRAPHIC INFORMATION SYSTEM			N20	ADM O ADM R		120.00 .00	1.00 .00	.00 50.00	.00 1.00	.00 50.00	.00 1.00	.00 50.00	.00 1.00	120.00 150.00	1.00 3.00
Subtotal							120.00	1.00	50.00	1.00	50.00	1.00	50.00	1.00	270.00	4.00
999 820.000 N	DEVELOP RESEARCH FACILITIES	238		N17 N20	ADM O		40.00	.00	.00	.00	.00	.00	.00	.00	40.00	0.00
15 920.000 N	MONITOR RIVER USE			N18	MON R		7.50	0.50	7.50	0.50	7.00	0.50	7.50	0.50	29.50	2.00
999 921.000 N	SURVEY PERCEPTIONS OF RIVER USERS			N18	RES C		50.00	.00	.00	.00	.00	.00	.00	.00	50.00	0.00
999 930.000 N	WILD & SCENIC RIVER DESIGNATION STUDY			N12 N13	ADM O		10.00	0.20	.00	.00	.00	.00	.00	.00	10.00	0.20
114 projects printed																
Grand Total \$\$							2485.00		1668.50		1992.50		1225.50		7371.50	
Grand Total FTE							36.02		28.62		37.77		27.77		130.18	

Active Filter: (No filter)

Output Selections:

Resource types included: CULTURAL/INTEGRATED/NATURAL

Initial fiscal year: 1997

02/17/98

12:37:53

FUNDED TABLE  
CULTURAL/INTEGRATED/NATURAL  
FUNDED AMOUNTS  
(\$ in thousands - by activity type)

Page: 0001

FY: 1997

Park: BUFF

Cluster: GPSO

FUNDING SOURCE	TOTAL	RES	MIT	MON	PRO	INT	ADM
NDON	8.50	2.50	0.00	0.00	0.00	6.00	0.00
NFED	4.50	4.50	0.00	0.00	0.00	0.00	0.00
NOTH	2.50	0.00	0.00	2.50	0.00	0.00	0.00
NSTA	2.00	0.00	0.00	0.00	0.00	2.00	0.00
PCR1	21.00	2.50	12.50	6.00	0.00	0.00	0.00
PCR2	12.00	0.00	0.00	2.00	0.00	0.00	10.00
PNR1	100.70	0.00	1.50	79.00	6.00	2.00	12.20
PNR2	1.00	0.00	0.00	0.00	0.00	1.00	0.00
POF1	35.00	0.00	10.00	18.00	0.00	2.00	5.00
RCCM	3.00	0.00	0.00	0.00	3.00	0.00	0.00
RNRM	0.60	0.00	0.60	0.00	0.00	0.00	0.00
RVIP	1.00	0.10	0.70	0.20	0.00	0.00	0.00
SFIR	5.00	0.00	0.00	5.00	0.00	0.00	0.00
SNWR	30.00	0.00	0.00	25.00	0.00	0.00	5.00
TOTAL	226.80	9.60	25.30	137.70	9.00	13.00	32.20

Active Filter: (No filter)

Output Selections:

Resource types included: CULTURAL/INTEGRATED/NATURAL

Initial fiscal year: 1997

02/17/98

12:38:08

UNFUNDED TABLE  
CULTURAL/INTEGRATED/NATURAL  
UNFUNDED AMOUNTS  
(\$ in thousands - by funding type)

Page: 0001

FY: 1997

Park: BUFF

Cluster: GPSO

FUNDING TYPE	TOTAL	RES	MIT	MON	PRO	INT	ADM
Cyclic	196.50	65.00	49.00	82.50	0.00	0.00	0.00
Onetime	2089.50	1181.50	529.00	73.00	105.00	10.00	191.00
Recur.	902.50	191.00	140.50	444.00	47.00	0.00	80.00
TOTAL	3188.50	1437.50	718.50	599.50	152.00	10.00	271.00

Active Filter: (No filter)

Output Selections:

Funded data only

Initial fiscal year: 1997

Summary Report: Funded \$ by Activity

02/17/98

RMP Summary Report

Page: 0001

12:38:56

Funded \$ by Activity

FY: 1997-2000

Park: BUFF

Cluster: GPSO

ACTIVITY	1997	1998	1999	2000	TOTAL
Research	9,600	43,000	0	0	52,600
Mitigation	25,300	45,500	39,500	38,000	148,300
Monitoring	137,700	94,000	79,000	67,500	378,200
Protection	9,000	6,000	0	0	15,000
Interpretation	13,000	14,000	0	0	27,000
Administration	32,200	146,500	131,500	0	310,200
-=<<TOTALS>>=-	226,800	349,000	250,000	105,500	931,300

=====



Active Filter: (No filter)

Output Selections:

Unfunded data only

Initial fiscal year: 1997

Summary Report: Unfunded \$ by Activity

02/17/98

12:39:20

RMP Summary Report

Unfunded \$ by Activity

Page: 0001

FY: 1-4

Park: BUFF

Cluster: GPSO

ACTIVITY	1	2	3	4	TOTAL
Research	1,261,500	847,000	433,000	281,000	2,822,500
Mitigation	620,000	641,500	608,500	203,000	2,073,000
Monitoring	240,500	614,500	618,000	515,000	1,988,000
Protection	152,000	67,000	47,000	47,000	313,000
Interpretation	10,000	0	3,000	3,000	16,000
Administration	271,000	132,000	132,000	128,000	663,000
--<<TOTALS>>--	2,555,000	2,302,000	1,841,500	1,177,000	7,875,500

=====

Project Statement  
Last Update: 02/04/98  
Initial Proposal: 1994

BUFF-C-110.000  
Priority: 3  
Page Num: 0001

Title : PREPARE ADMINSTRATIVE HISTORY

Funding Status: Funded: 5.00 Unfunded: 65.00

Servicewide Issues : C37 (ADMIN HIS)  
Cultural Resource Type: COMB (Combination)  
N-RMAP Program codes :

10-238 Package Number : 150

#### Problem Statement

An administrative history has not been prepared for Buffalo National River. Funding from WASO in 1995 provided preliminary data collection from park files, but critical oral history interviews and analysis and synthesis remain prior to actual writing.

Buffalo National River was established March 1, 1972, twenty-five years ago. The "national river" designation, the first park to be so labeled, was chosen to reflect the park's national resource significance, together with its legislated allowance for not so traditional park activities as hunting and fishing.

Park establishment was hotly contested and is still debated locally. It is important to record the park administrative history from the point of establishment to its evolution of today. Buffalo National River spans a time period in National Park Service history in which outright federal ownership has turned toward public and private partnership. Land management controversy at Buffalo River necessitate innovative solutions, such as the Boxley Valley Land Use Plan which later guided other park areas. The park's continuing complexity of land stewardship, its involvement with numerous county government systems, and the recent watershed protection issues outside the park boundary, make it critical that the issues and decisions of the early park period be recorded. Key figures in the establishment and early administration are still alive, but all are now retired.

#### Description of Recommended Project or Activity

Provide funding for continuance of the collection and analysis of data, and the preparation of the administrative history. A high priority is funding for critical oral history interviews with retired park personnel and community and legislative leaders closely involved with the park's early years.

Last Update: 02/04/98  
Initial Proposal: 1994

Project Statement

BUFF-C-110.000  
Priority: 3  
Page Num: 0002

BUDGET AND FTEs:

-----FUNDED-----					
Source	Activity	Fund Type	Budget (\$1000s)	FTEs	
1995: TEMP\$-CR	RES	One-time	5.00	0.20	
Total:			5.00	0.20	
-----UNFUNDED-----					
	Activity	Fund Type	Budget (\$1000s)	FTEs	
Year 1:	RES	One-time	40.00	0.20	
Year 2:	RES	One-time	25.00	0.20	
Total:			65.00	0.40	

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B

	Project Statement	BUFF-C-111.001
Last Update: 02/05/98		Priority: 999
Initial Proposal: 1996		Page Num: 0003

Title : ARCHEOLOGY VIDEO AND EXHIBIT  
 Sub-title:

Funding Status: Funded: 0.00 Unfunded: 10.00

Servicewide Issues : C39 (HERTAGE ED)  
 Cultural Resource Type: CULL (Cultural Landscape)  
 N-RMAP Program codes :

10-238 Package Number :

#### Problem Statement

The desire from the public to learn the prehistory of the Ozarks is enormous. Presently the archeologist uses borrowed equipment and poor quality archeological material. If the program could be better quality and more up to date with the audio-visual presentations it would impact and greatly impress the audience. This type of outreach program that draws the audience into the preservation and research ethic will benefit the Park in the long-term and satisfy the fresh curiosity of the communities around the Buffalo River. This project is identified as GPRA goal 11b2, Interpretive and Educational Programs.

#### Description of Recommended Project or Activity

A video of the excavation process from pre-field work and background research through the excavation of the site and ending with interpretation and exhibition of the material will inform the public of the long, costly and exciting process of archeology. It will educate them on how not to destroy a site and it will educate them on how to preserve and record their own sites. Along with the video will be an exhibit of the artifacts they saw in the video, thus connecting the beginning of the video to the final presentation.

#### BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00

Last Update: 02/05/98  
Initial Proposal: 1996

Project Statement

BUFF-C-111.001  
Priority: 999  
Page Num: 0004

-----UNFUNDED-----  
Activity Fund Type Budget (\$1000s) FTEs  
Year 1: INT One-time 10.00 0.20  
Total: =====  
10.00 0.20

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation:

	Project Statement	BUFF-C-112.000
Last Update: 02/11/98		Priority: 999
Initial Proposal: 1994		Page Num: 0005

Title : ASSESS CULTURAL RESOURCES IN WILDERNESS UNITS

Funding Status: Funded: 0.00 Unfunded: 20.00

Servicewide Issues : C02 (ID & EVAL)  
C53 (ICAP)  
Cultural Resource Type: COMB (Combination)  
N-RMAP Program codes :

10-238 Package Number :

#### Problem Statement

Three distinct areas of the park are designated as wilderness, totaling 36,000 acres. Within these areas are structures and archeological sites, some of which previously were surveyed for National Register eligibility, but have deteriorated significantly since park acquisition. Some structure sites have become ruins. Other sites have not been surveyed. All cultural resources within wilderness need to be inventoried and assessed for condition and significance. Because management and maintenance of cultural resources within wilderness is limited by the definition of wilderness use, a plan needs to be developed outlining which structures and sites will receive continued care and protection, and to what degree, and what is to happen to remaining structures and sites.

#### Description of Recommended Project or Activity

Inventory and assess sites and structures within wilderness boundaries. Mark all sites and structures on a base map and transfer to GIS when it is instated. Prepare a management plan for preservation and protection of sites and structures within wilderness. See project statement C115 for a parkwide overview and assessment. Related project is C-601.02

#### BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00

	Project Statement	BUFF-C-112.000
Last Update: 02/11/98		Priority: 999
Initial Proposal: 1994		Page Num: 0006

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	15.00	0.50
Year 2:	RES	One-time	5.00	0.20
			=====	
		Total:	20.00	0.70

(Optional) Alternative Actions/Solutions and Impacts

This action is necessary for full implementation of the Wilderness/Backcountry Management Plan [draft 1993]. Until eligibility assessments are made, the status of cultural resources in wilderness will be uncertain.

Compliance codes : EXCL (CATEGORICAL EXCLUSION)  
 ARPA (ARCH. RES. PROT. ACT.)

Explanation: 516 DM2 APP. 2, 1.6

	Project Statement	BUFF-C-114.000
Last Update: 02/12/98		Priority: 15
Initial Proposal: 1994		Page Num: 0007
Title : INVENTORY AND DOCUMENT CEMETERIES		
Funding Status: Funded: 2.40 Unfunded: 30.00		
Servicewide Issues : C53 (ICAP)		
		C10 (INVENTORY)
Cultural Resource Type: COMB (Combination)		
N-RMAP Program codes :		
10-238 Package Number : 156		

#### Problem Statement

Buffalo National River has 35 known cemeteries within its boundaries, from private, still active cemeteries, to small, isolated family plots long out of use. Access to many cemeteries is limited as old roads return to vegetation, or are now within wilderness units. Inventory and documentation of the cemeteries is an ongoing project, with assistance from other divisions and volunteers. The cemetery data is essential for future management decisions.

#### Description of Recommended Project or Activity

Continue inventory and documentation of cemeteries, using the forms developed to date, and integrating GIS. Prepare scale drawing of individual cemeteries. Utilize the data to develop a management plan for cemetery access, preservation, and use. Cultural resource staff will continue to inventory and document. Funding is needed for GIS and site mapping [Related project is C174]

#### BUDGET AND FTEs:

		-----FUNDED-----			
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1994:	PKBASE-CR	RES	Recurring	0.50	0.10
	VOL-IN-PK	RES	Recurring	0.10	0.10
				-----	
		Subtotal:		0.60	0.20
1995:	PKBASE-CR	RES	Recurring	0.50	0.10
	VOL-IN-PK	RES	Recurring	0.10	0.10
				-----	
		Subtotal:		0.60	0.20



Last Update: 02/12/98  
Initial Proposal: 1994

# Project Statement

BUFF-C-114.000  
Priority: 15  
Page Num: 0008

1996:	PKBASE-CR RES	Recurring	0.50	0.10
	VOL-IN-PK RES	Recurring	0.10	0.10
		Subtotal:	0.60	0.20
1997:	PKBASE-CR RES	Recurring	0.50	0.10
	VOL-IN-PK RES	Recurring	0.10	0.10
		Subtotal:	0.60	0.20
		Total:	2.40	0.80

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	10.00	0.30
Year 2:	RES	One-time	10.00	0.30
Year 3:	RES	One-time	10.00	0.30
		Total:	30.00	0.90

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(10)

	Project Statement	BUFF-C-115.000
Last Update: 02/17/98		Priority: 999
Initial Proposal: 1994		Page Num: 0009

Title : INVENTORY/ASSESS PARK STRUCTURES/SITES

Funding Status: Funded: 4.00 Unfunded: 36.00

Servicewide Issues : C53 (ICAP)  
C36 (NR DOCMNT)  
Cultural Resource Type: STRC (Structure)  
N-RMAP Program codes :

10-238 Package Number :

#### Problem Statement

Surveys were done of acquired structures from 1973 to 1982, with recommendations made for retention or salvage of structures. A number of structures recommended for retention have since been incorporated into historic districts. The remaining structures include ones recommended for retention but for which no additional study has been done, and salvaged structure sites on which standing buildings were removed but wells, cisterns, and other more permanent features were left, as well as structures recommended for salvage but were never removed. Many of the salvaged sites have become potential historic archeological sites as time has passed and our understanding of settlement patterns at Buffalo River have increased. A current inventory and updated assessment needs to be done on these isolated structure areas, with recommendations for management. Currently, these sites are dealt with on a case by case need, as when safety considerations are involved. Field documentation has been done by the park staff as structures and sites are encountered, but no management decisions have been made.

#### Description of Recommended Project or Activity

Continue to locate and document isolated structures and sites. Management lists should be prepared showing current recommended disposition of these structures. Recommendations should also be made for any resources which might eligible for the National Register.

Last Update: 02/17/98  
Initial Proposal: 1994

# Project Statement

BUFF-C-115.000  
Priority: 999  
Page Num: 0010

## BUDGET AND FTEs:

			-----FUNDED-----		
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1994:	PKBASE-CR	RES	Recurring	1.00	0.10
1995:	PKBASE-CR	RES	Recurring	1.00	0.10
1996:	PKBASE-CR	RES	Recurring	1.00	0.10
1997:	PKBASE-CR	RES	Recurring	1.00	0.10
Total:				4.00	0.40
			-----UNFUNDED-----		
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		RES	Recurring	4.00	0.10
		RES	One-time	5.00	0.10
	Subtotal:			9.00	0.20
Year 2:		RES	Recurring	4.00	0.10
		RES	One-time	5.00	0.10
	Subtotal:			9.00	0.20
Year 3:		RES	Recurring	4.00	0.10
		RES	One-time	5.00	0.10
	Subtotal:			9.00	0.20
Year 4:		RES	Recurring	4.00	0.10
		RES	One-time	5.00	0.10
	Subtotal:			9.00	0.20
Total:				36.00	0.80

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : NHPA ((106) NAT. HIST. PRES.)

Explanation:

	Project Statement	BUFF-C-121.000
Last Update: 02/12/98		Priority: 1
Initial Proposal: 1994		Page Num: 0011

Title : PREPARE PARKWIDE HISTORIC RESOURCE STUDY

Funding Status: Funded: 0.00 Unfunded: 75.00

Servicewide Issues : C35 (HRS)  
C63 (HIS BASE MP)  
Cultural Resource Type: COMB (Combination)  
N-RMAP Program codes :

10-238 Package Number : 149

#### Problem Statement

Buffalo National River has a rich cultural history backed up by an abundance of cultural properties identified through individual surveys and inventories for development projects. Known park themes range from historic Indian settlement, including a leg of the Trail of Tears, to slavery, Civil War action, mining, logging, and homestead settlement. A cultural framework is needed to bring together the various surveys, reports, and studies, and professionally evaluate the themes and resources represented within the larger park and regional context. This would help determine such questions as whether a multiple property National Register nomination would more effectively serve park resources, how limited cultural resource funding should be best directed, or what themes and current scholarship should park interpretation be providing to visitors. Dwight Pitcaithley's 1976 dissertation "The Buffalo River from Settlement to National River" provided the first overall look at the area history. The 1987 "Historic Resource Assessment" prepared by the park historian in lieu of a history resource study began a basic framework for Buffalo River context and gave examples of appropriate park resources. Both studies would contribute to an Historic Resource Study. A much needed element is a historic resource base map. At present even the boundaries of the National Register districts are not available on park maps.

#### Description of Recommended Project or Activity

Fund a complete Historic Resource Study to provide the park with a necessary baseline research report.

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	25.00	0.20
Year 2:	RES	One-time	25.00	0.20
Year 3:	RES	One-time	25.00	0.20
			=====	
Total:			75.00	0.60

(Optional) Alternative Actions/Solutions and Impacts

Expand the draft "Historic Resources Assessment" to fulfill the requirements for a parkwide Historic Resource Study and to provide a vehicle to evaluate how limited cultural resource funding is best spent.

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(10)

Last Update: 02/11/98  
Initial Proposal: 1994

# Project Statement

BUFF-C-122.000  
Priority: 999  
Page Num: 0013

Title : PREPARE RUSH HISTORIC RESOURCE STUDY

Funding Status: Funded: 0.00 Unfunded: 75.00

Service-wide Issues : C35 (HRS)  
C71 (VISIT IMPCT)  
Cultural Resource Type: COMB (Combination)  
N-RMAP Program codes :

10-238 Package Number :

## Problem Statement

The Rush Historic District contains an overlay of historical and archeological resources within a significant geological area. It is a prime cultural landscape related to mining, as well as being a multiple use area within the park with great potential for conflicting management goals because of the diverse recreation use. Road maintenance and threats to visitor safety can outweigh cultural integrity. The abandoned mines, contributing resources of the district, pose additional problems of safety. Additionally, private land ownership adjacent to the district may add new impacts on the resources. The number and variety of structures and sites within the Rush district and the need for better informed decisions regarding park use impacts on the historic district suggest a resource study is needed to identify significant themes and relate the district resources to those themes. The overlay of the mining history of the area needs to be developed more thoroughly as well as a recognition of the importance to the area of its geological components. The field survey map prepared for the National Register nomination needs to be updated and professionally prepared. Documentation to HAER/HABS standards is preferred.

## Description of Recommended Project or Activity

Recommended Action: Prepare a Historic Resource Study specific to the Rush Historic District in order to identify themes and resources, identify sensitive and vulnerable areas in terms of that context, and identify preferred areas for the multiple use needs within the district. A Historic Base Map should be prepared.

Last Update: 02/11/98  
Initial Proposal: 1994

Project Statement

BUFF-C-122.000  
Priority: 999  
Page Num: 0014

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	75.00	0.20
Total:			75.00	0.20

(Optional) Alternative Actions/Solutions and Impacts

N/A

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(10)

Last Update: 02/11/98  
Initial Proposal: 1994

Project Statement

BUFF-C-126.000  
Priority: 999  
Page Num: 0015

Title : INTEGRATE "DISCOVERY SITES" INTO HRS

Funding Status: Funded: 0.00 Unfunded: 50.00

Servicewide Issues : C38 (SPEC STUDY)  
C02 (ID & EVAL)  
Cultural Resource Type: COMB (Combination)  
N-RMAP Program codes :

10-238 Package Number :

Problem Statement

Historic resources which were determined through various studies as possessing historical or architectural significance, but which will not be preserved, have become "discovery sites" in the backcountry and along the trail system. Visitors come into contact with these sites and have questions about their history. Many of these resources have not been adequately documented. Documentation needs to be kept about these sites and records maintained to document changes in their condition over time.

Description of Recommended Project or Activity

A special history study should be conducted to record discovery sites, identify significance, and link related sites. Base maps should be prepared identifying such sites along visitor use areas. Identification of all such sites would be the first step and would require field as well as office time. Research materials kept in the historian's office need to be integrated for sites and the information presented in a format which would be easily used by all park divisions. This project might be best handled as a multi-year project utilizing a cultural resource training position.

It shall be the policy of the Buffalo National River to conduct archeological and historical inventories along the route of any proposed trail development.

BUDGET AND FTES:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTES
			=====	
Total:			0.00	0.00



	Project Statement	BUFF-C-126.000
Last Update: 02/11/98		Priority: 999
Initial Proposal: 1994		Page Num: 0016

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	30.00	0.20
Year 2:	RES	One-time	20.00	0.20
			=====	
	Total:		50.00	0.40

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(10)

Last Update: 02/12/98  
Initial Proposal: 1994

# Project Statement

BUFF-C-130.000  
Priority: 999  
Page Num: 0017

Title : COMPLETE HISTORIC STRUCTURE REPORT, RUSH DISTRICT

Funding Status: Funded: 4.00 Unfunded: 80.00

Servicewide Issues : C52 (HSR)  
C70 (ENVRM IMPCT)  
Cultural Resource Type: STRC (Structure)  
N-RMAP Program codes :

10-238 Package Number : 170

## Problem Statement

The Historic Structure Report for the Rush Historic District needs to be completed. A draft of the Historical Data section prepared by the park historian was reviewed by the Regional Office in 1987 but editing comments were never addressed and no further funding was available as promised for completion of the full report. Rush contains ten standing structures, all of which received some degree of emergency stabilization in the 1980s. However, weathering and vandalism continue to be significant problems. Safety issues required that six structures--the general store and five houses--be fenced off to restrict visitor access. The remainder of the historic district contains ruins or sites; losing the standing structures would lessen the integrity of the historic district overall. The structures need documentation and preservation planning. All the structures are on the LCS and part of the Rush Historic District, a significant historic mining landscape. Tours at Rush are part of park interpretation and would benefit from the information found in the HSR. See projects C-122 and C-181 for related projects.

## Description of Recommended Project or Activity

Fund the completion and printing of the Historical Data section so the information will be available in a written form for the park and the public. Fund completion of the remaining sections of the HSR.

## BUDGET AND FTEs:

-----FUNDED-----					
Source	Activity	Fund Type	Budget (\$1000s)	FTEs	
1994:	PKBASE-CR RES	One-time	4.00	0.10	

Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-130.000  
Priority: 999  
Page Num: 0018

		=====		
Total:		4.00	0.10	
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	40.00	0.20
Year 2:	RES	One-time	40.00	0.20
		=====		
Total:		80.00	0.40	

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(10)

Last Update: 02/11/98  
Initial Proposal: 1994

Project Statement

BUFF-C-131.000  
Priority: 999  
Page Num: 0019

Title : COMPLETE HISTORIC STRUCTURE REPORT, BEAVER JIM FARM

Funding Status: Funded: 0.00 Unfunded: 30.00

Servicewide Issues : C52 (HSR)  
Cultural Resource Type: STRC (Structure)  
N-RMAP Program codes :

10-238 Package Number : 170

Problem Statement

The Historic Structure Report for the Beaver Jim Villines Farm needs to be completed. A draft report was written about 1978 by then Regional historian Dwight Pitcaithley, but has never been completed or approved. The Beaver Jim Farm was targeted in all early planning documents as one of the significant historic structures at the National River. The farm contributes to the Boxley Valley Historic District; all structures are considered category 1. The current 26 page draft HSR is an excellent reference for the farm but needs to be expanded, updated and completed for use in interpretation and future preservation. Emergency stabilization work performed on the structures in the 1980s needs to be integrated with this document.

Description of Recommended Project or Activity

Update the existing draft document to meet the requirements of a Historic Structure Report, integrating preservation work done to date. Fund printing of the completed document.

BUDGET AND FTEs:

Source		Activity	FUND Type	Budget (\$1000s)	FTEs
			Total:	0.00	0.00
		Activity	UNFUNDED Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time		20.00	0.20
Year 2:	RES	One-time		10.00	0.10
			Total:	30.00	0.30

Project Statement  
Last Update: 02/11/98  
Initial Proposal: 1994

BUFF-C-131.000  
Priority: 999  
Page Num: 0020

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(10)

Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-132.000  
Priority: 999  
Page Num: 0021

Title : COMPLETE HISTORIC STRUCTURE REPORT, BOXLEY MILL

Funding Status: Funded: 0.00 Unfunded: 40.00

Servicewide Issues : C52 (HSR)  
C61 (LEASING)  
Cultural Resource Type: STRC (Structure)  
N-RMAP Program codes :

10-238 Package Number : 170

Problem Statement

The Historic Structure Report for the Boxley Mill, now under historic lease, needs to be completed. The Physical Analysis section, prepared by the Williamsport Training Center, was left as the "final draft." The remaining sections need to be prepared and the overall document approved. The Boxley Mill is a category 1 structure contributing to the Boxley Historic District, as well as being individually listed on the National Register. Currently the Mill is under a 50 year historic lease. Completion and approval of this document is necessary for fulfilling the historic lease guidelines and providing our private partner, the Gorgas Science Foundation, with accurate information for preservation and eventual interpretation of the mill.

Description of Recommended Project or Activity

Fund completion of the Historic Structure Report and work with our partner towards printing of the document.

BUDGET AND FTEs:

Source		Activity	Fund Type	Budget (\$1000s)	FTEs
			Total:	0.00	0.00
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES		One-time	40.00	0.20
			Total:	40.00	0.20

Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-132.000  
Priority: 999  
Page Num: 0022

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : NHPA ((106) NAT. HIST. PRES.)

Explanation:

	Project Statement	BUFF-C-133.000
Last Update: 02/12/98		Priority: 999
Initial Proposal: 1994		Page Num: 0023

Title : COMPLETE PARKER-HICKMAN HISTORIC STRUCTURE REPORT

Funding Status: Funded: 1.00 Unfunded: 30.00

Servicewide Issues : C52 (HSR)  
 Cultural Resource Type: STRC (Structure)  
 N-RMAP Program codes :

10-238 Package Number : 170

#### Problem Statement

The Historic Structure Report for the Parker-Hickman Farm needs to be completed. The Historical Data section was finished in 1987 by the park historian and approved by the Chief Historian in 1988, but the remaining sections have never been completed. The Parker-Hickman Farm was entered on the National Register in 1987 and is one of the most significant historic resources for the National River. It is essential for future preservation planning and interpretation that the Historic Structure Report be completed. The completion report from the 1985 preservation work needs to be integrated with this document.

#### Description of Recommended Project or Activity

Approve the Historical Data section as a completed document and fund its printed dissemination. Fund the completion of the administrative and physical analysis sections.

#### BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1994:	RG-CR-MTN	RES	Recurring	1.00	0.10
				=====	
Total:				1.00	0.10
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		RES	One-time	30.00	0.20
				=====	
Total:				30.00	0.20



Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-133.000  
Priority: 999  
Page Num: 0024

(Optional) Alternative Actions/Solutions and Impacts

Fund a completed HSR. Keep the HSR in draft until completion of the remaining sections. This will add to the already lengthy lapse of time for completion of this report.

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(10)

Project Statement  
Last Update: 02/12/98  
Initial Proposal: 1994

BUFF-C-134.000  
Priority: 11  
Page Num: 0025

Title : PREPARE HISTORIC STRUCTURE REPORT COLLIER HOMESTEAD

Funding Status: Funded: 0.00 Unfunded: 30.00

Servicewide Issues : C52 (HSR)  
C71 (VISIT IMPCT)  
Cultural Resource Type: STRC (Structure)  
N-RMAP Program codes :

10-238 Package Number : 154

#### Problem Statement

The Collier Homestead is a historic farm consisting of four structures and landscape elements such as historic plantings. The homestead was determined National Register eligible in 1987 during the planning phase for the Tyler Bend development, but no monies were programmed for stabilization or preservation of the homestead. As part of the campground and visitor center development, a trail system was developed past the homestead, leading to emergency stabilization in 1991 to address potential safety problems. The trail past the homestead was recently made handicapped accessible. There are no approved documents to guide preservation and development at the homestead and no documents recording work to date. Volunteers have provided most of the work which has been accomplished at the homestead. In the meantime, the homestead, because of its easy accessibility, has become an increasingly used resource by visitors to the Tyler Bend area, making maintenance for visitor safety and structural protection essential.

#### Description of Recommended Project or Activity

Prepare a Historic Structure Report for the homestead. The park historian could prepare the administrative and historical data sections, but the structure analysis needs to be contracted, or prepared by a professional NPS historical architect. Project C-142 requests a Cultural Landscape Plan, while C-250 addresses preservation and restoration.

Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-134.000  
Priority: 11  
Page Num: 0026

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	20.00	0.20
Year 2:	RES	One-time	10.00	0.10
Total:			=====	=====
			30.00	0.30

(Optional) Alternative Actions/Solutions and Impacts

No action will leave the homestead vulnerable to other decisions being made for visitor use of the site, such as the trail system, the native grass restoration project, and the seasonal visitor area mowing. Without a Historic Structure Report for guidance, safety considerations may lead to the destruction, rather than the preservation, of the resource. The considerable research material which has been collected regarding the site needs to be compiled and analyzed for future preservation and interpretation.

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(10)

Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-135.000  
Priority: 9  
Page Num: 0027

Title : PREPARE CCC STRUCTURES HSR

Funding Status: Funded: 0.00 Unfunded: 60.00

Servicewide Issues : C52 (HSR)  
C71 (VISIT IMPCT)

Cultural Resource Type: STRC (Structure)

N-RMAP Program codes :

10-238 Package Number : 153

Problem Statement

A Historic Structure Report is needed for the Civilian Conservation Corps structures at Buffalo Point. All of these structures are still in use for their original functions, most with a high degree of integrity despite fifty years of continued use. Preservation guidelines completed in 1993 addressed the buildings from the point of routine preservation maintenance. However, no document has pulled together a thorough history of construction and use of these facilities, or researched the changes to the structures during the state park years and the early NPS years. This information needs to be gathered while former CCC workers and park employees are still available to address research questions. All the CCC structures receive heavy seasonal use, with immediate and constant maintenance needs in terms of visitor safety. The integrity of these structures could be in jeopardy without a guide to their historic materials and design.

Description of Recommended Project or Activity

Prepare a Historic Structure Report for the CCC structures, utilizing the information collected for the preservation guidelines. [see related projects C-231, C-261, C-173]

BUDGET AND FTEs:

-----FUNDING-----		-----FUNDING-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00

Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-135.000  
Priority: 9  
Page Num: 0028

-----UNFUNDED-----

	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	45.00	0.30
Year 2:	RES	One-time	15.00	0.10
		Total:	60.00	0.40

=====

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(10)

Last Update: 02/12/98  
Initial Proposal: 1998

# Project Statement

BUFF-C-136.000  
Priority: 7  
Page Num: 0029

Title : PREPARE HISTORIC STRUCTURE REPORT, ERBIE CHURCH

Funding Status: Funded: 0.00 Unfunded: 15.00

Servicewide Issues : C52 (HSR)  
Cultural Resource Type: STRC (Structure)  
N-RMAP Program codes :

10-238 Package Number : 152

## Problem Statement

The Erbie Community Church, a frame country church built in 1896 and continuously used for church services until 1992, has reverted to NPS preservation and maintenance. Until 1992 the church was operated under a special use permit and all maintenance was performed by the church members with some oversight from park. The park is now committed to preserving and maintaining the church, either as an interpretive structure in the Erbie Historic Zone, or once again as an active church building. Emergency stabilization is needed, beginning with removal of lead base paint and repainting, scheduled for this year. An Historic Structure Report is needed to guide current preservation work and prepare the building for possible future occupancy. Currently, the building is used for community meetings, weddings, and other short term activities. Little is known about previous repairs and maintenance and significant features of the structure; all available information should be recorded and summarized. Related projects are C-161, Prepare National Register Form; and C-222, Preserve Erbie Church.

## Description of Recommended Project or Activity

Fund a Historic Structure Report to guide current preservation needs and prepare the building for future occupancy and use.

### BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00

Last Update: 02/12/98  
Initial Proposal: 1998

Project Statement

BUFF-C-136.000  
Priority: 7  
Page Num: 0030

-----UNFUNDED-----

	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	15.00	0.10
		Total:	=====	
			15.00	0.10

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation:

	Project Statement	BUFF-C-139.000
Last Update: 02/12/98		Priority: 5
Initial Proposal: 1998		Page Num: 0031

Title : PROVIDE BOXLEY DESIGN GUIDELINES AND OVERSIGHT

Funding Status: Funded: 0.00 Unfunded: 0.00

Servicewide Issues : C57 (SPEC STUDY)  
C61 (LEASING)  
Cultural Resource Type: COMB (Combination)  
N-RMAP Program codes :

10-238 Package Number : 151

#### Problem Statement

The Land Use Plan for Boxley Valley [approved 1985] provided for the return of park lands to private ownership under extensive preservation easements. The plan and the easements allowed for new construction, removal of certain buildings, continuation of agricultural activities in a modern world, as well as preserving the integrity of the contributing features of the district. NPS involvement is required for owner requests for changes to their National Register properties. In tandem with these easements, are the loosely worded scenic easements of the earlier park land acquisition period which limit park participation to interpreting and "maintaining the pastoral landscape" and enforcing restrictions on buildings such as size limits. The park does not have a professional architect on staff and the regional professional previously assigned to the park is overwhelmed with projects. Landowner request for NPS review of proposed construction typically requires a lengthy period of time for consultation and frequently confusion between the park and the landowner, who understandably wants to get on with the project. The gains made by the Boxley Plan in partnering with the private sector will be undermined or lost if more efficient technical assistance can not be provided. See related project C-321.

#### Description of Recommended Project or Activity

Even if a staffing increase were possible, the park and the landowner need a professionally prepared set of guidelines for understanding appropriate construction and landscape use in the valley. The guidelines should emphasize an Ozarks vernacular and agricultural landscape, addressing building types and materials and size and such questions as when, if ever, are 20th century metal buildings appropriate; siting ( e. g. how many hay storage units can a field sustain); removal of structures (how can old barns be modified to be functional; introduction of new activity types (e.g. is a private rodeo arena still appropriate if it needs overhead electric lights); fencing (e.g. are there different standards for areas in and out of the public view);



among many others. The documentation should be a useable, working handbook with plenty of illustrations so that it is easily used by layperson and professional alike. It should be prepared using an interdisciplinary team such as prepared the initial Boxley Land Use Plan. Final preparation should involve Boxley community members. Such a plan could also benefit other park areas with similar concerns.

BUDGET AND FTEs:

-----FUNDED-----					
Source	Activity	Fund Type	Budget (\$1000s)	FTEs	
			=====		
Total:			0.00	0.00	
-----UNFUNDED-----					
	Activity	Fund Type	Budget (\$1000s)	FTEs	
			=====		
Total:			0.00	0.00	

(Optional) Alternative Actions/Solutions and Impacts

The ideal solution would be to have a historical architect on staff, someone who could deal with the structural elements as well as the landscape elements and understand the needs of an agricultural community. This individual could respond directly to landowners, promoting solutions which will benefit both them and the qualities of the historic district. This individual might even set up a valley committee to discuss preservation alternatives and proposals.

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation:

Last Update: 02/11/98  
Initial Proposal: 1994

# Project Statement

BUFF-C-141.000  
Priority: 13  
Page Num: 0033

Title : PREPARE CULTURAL LANDSCAPE INVENTORY

Funding Status: Funded: 0.00 Unfunded: 4.00

Servicewide Issues : C10 (INVENTORY)  
C63 (HIS BASE MP)  
Cultural Resource Type: CULL (Cultural Landscape)  
N-RMAP Program codes :

10-238 Package Number : 155

## Problem Statement

Buffalo National River reflects a diversity of cultural landscape: the ethnographic and vernacular rural landscape of Boxley Valley; the historic mining landscape of Rush; the designed landscape of the Civilian Conservation Corps-constructed state park, and the vernacular landscapes at Erbie and the Tyler Bend area. Additionally, there may be smaller landscape units within the park which have not received recognition. Without the identification of potential cultural landscapes and the subsequent integration of landscape to historic district, many valuable landscape elements may be lost to change due to use patterns and sellback (as in Boxley Valley) or change due to park development (as at Rush, Buffalo Point, or Erbie).

## Description of Recommended Project or Activity

Survey the park for cultural landscapes under the current regional funding for CLIs. Define boundaries, landscape type, impacts (both from park use and park planning). A Cultural Landscapes Inventory may be the most efficient method for this survey. Future consideration should be management and treatment plans specific to each landscape.

### BUDGET AND FTEs:

Source	Activity	FUND Type	Budget (\$1000s)	FTEs
Total:			0.00	0.00

Last Update: 02/11/98  
Initial Proposal: 1994

Project Statement

BUFF-C-141.000  
Priority: 13  
Page Num: 0034

-----UNFUNDED-----

	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	2.00	0.10
Year 2:	RES	One-time	2.00	0.10
		Total:	4.00	0.20

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(10)

Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-142.000  
Priority: 999  
Page Num: 0035

Title : PREPARE CULTURAL LANDSCAPE PLAN, COLLIER HOMESTEAD

Funding Status: Funded: 0.00 Unfunded: 40.00

Servicewide Issues : C11 (REPORT)  
Cultural Resource Type: CULL (Cultural Landscape)  
N-RMAP Program codes :

10-238 Package Number : 155

Problem Statement

The Collier Homestead has been in a state of emergency preservation, through the use of volunteers, since 1987. At first the buildings were targeted, but the efforts of the stabilization led to the discovery of perennial plantings original to the Collier years. Further research revealed that many of these plants were medicinal herbs and flowering plants planted and utilized by the Collier family during their residency. Volunteer park staff began to inventory and mark the plantings and to care for the plant areas. Standard park mowing methods were unsuited to the homestead, so volunteers and seasonal interpretive staff assumed the landscape care for years. A cultural landscape plan is needed to more thoroughly document this area, and to develop direction for future interpretation at the site. Interest in the plantings has taken on a life of its own, so that the park is bound into a common sense management of the landscape until an overall plan can be developed. The park historian has gathered research information on the homestead landscape through interviews and photographs; ongoing site documentation has been kept. Preparation of a formal plan, by a landscape architect or other professional, is needed. [See C134 and C250 for related projects.]

Description of Recommended Project or Activity

Fund preparation of a cultural landscape report by a historical landscape architect, particularly so volunteers, such as the Ozark Native Plant Society, can assume maintenance responsibilities. The plan should document historic landscape areas and address threats from the various development uses around the homestead.

Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-142.000  
Priority: 999  
Page Num: 0036

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
Total:			0.00	0.00
=====				
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	40.00	0.20
Total:			40.00	0.20
=====				

(Optional) Alternative Actions/Solutions and Impacts

No action will diminish the assistance which could be provided by interested volunteers, and possible lead to a loss of plant specimens.

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(10)

Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-151.000  
Priority: 25  
Page Num: 0037

Title : PREPARE CIVIL WAR SITES SPECIAL HISTORY STUDY

Funding Status: Funded: 0.00 Unfunded: 40.00

Servicewide Issues : C38 (SPEC STUDY)  
C63 (HIS BASE MP)  
Cultural Resource Type: COMB (Combination)  
N-RMAP Program codes :

10-238 Package Number : 132

Problem Statement

The Buffalo River terrain played a role in Civil War activities in Arkansas: the isolation of the area aided the independent fighting units which used the area for maneuvers; the karst topography created saltpeter caves used to manufacture nitre for the Confederacy. The Buffalo River became a crossroads for Union and Confederate movements. The major Civil War activity areas along the river need to be identified and linked to the overall regional Civil War history. Skirmish sites and nitre production caves should be located on a historical base map. In 1995 the Buffalo River area was added to the Civil War Trust's Discovery Trail sites.

Description of Recommended Project or Activity

A special history study should be prepared to research Civil War activities and link that history to the overall Civil War activity of the region. An inventory should be prepared of any physical remains associated with the Civil War period and a historical base map prepared.

BUDGET AND FTEs:

Source		Activity	Fund Type	Budget (\$1000s)	FTEs
			FUNDED		
			Total:	0.00	0.00
		Activity	Fund Type	Budget (\$1000s)	FTEs
			UNFUNDED		
Year 1:	RES	One-time		40.00	0.20
			Total:	40.00	0.20

Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-151.000  
Priority: 25  
Page Num: 0038

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(10)

	Project Statement	BUFF-C-152.000
Last Update: 02/11/98		Priority: 999
Initial Proposal: 1994		Page Num: 0039

Title : PREPARE RIVER COMMUNITIES SPECIAL HISTORY STUDY

Funding Status: Funded: 0.00 Unfunded: 50.00

Servicewide Issues : C38 (SPEC STUDY)  
C02 (ID & EVAL)  
Cultural Resource Type: COMB (Combination)  
N-RMAP Program codes :

10-238 Package Number :

#### Problem Statement

Once river communities stretched the length of the river. Most of these communities faded away before park acquisition but left their names as geographical locators along the river corridor, or in some cases left physical remains of their past. In order to relate these river names to their history and to evaluate any remaining artifacts from these community areas, research is needed to identify these community areas and the extent of their influence, as well as their prominent structures and industries.

#### Description of Recommended Project or Activity

A special history study should be prepared to research river community sites and link that history to the overall themes of Buffalo River history. An inventory should be prepared of any physical remains associated with these communities, and a historical base map prepared.

#### BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
		Total:	0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	30.00	0.20
Year 2:	RES	One-time	20.00	0.20
			=====	
		Total:	50.00	0.40



	Project Statement	BUFF-C-152.000
Last Update: 02/11/98		Priority: 999
Initial Proposal: 1994		Page Num: 0040

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(10)

Last Update: 02/11/98  
Initial Proposal: 1994

Project Statement

BUFF-C-155.000  
Priority: 999  
Page Num: 0041

Title : PERFORM TREE-RING DATING OF LOG STRUCTURES

Funding Status: Funded: 5.00 Unfunded: 10.00

Servicewide Issues : C57 (SPEC STUDY)  
Cultural Resource Type: STRC (Structure)  
N-RMAP Program codes :

10-238 Package Number :

Problem Statement

PROBLEM STATEMENT: The most significant log structures at the National River can not be dated more precisely than the quarter of the century. A tree ring chronology exists for northwest Arkansas and could be used to provide more precise dating of these buildings. This information would be of benefit to interpretation of these structures, as well as placing the structures within their proper historical time frame. The University of Arkansas Dendrochronology Lab is available to do this work. Buffalo National River has in excess of 20 wholly log structures and a number of other partially log structures. In 1996 Eastern National provided a \$5000 grant towards this project.

Description of Recommended Project or Activity

Contract for a dendrochronology study of log structures at the National River. Tthe Parker-Hickman house; the Robert Villines house; the Beaver Jim Villines house; and the William Villines house are among the most significant for dating and research needs.

BUDGET AND FTEs:

			-----FUNDED-----		
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1996:	\$-DONATE	RES	One-time	2.50	0.10
1997:	\$-DONATE	RES	One-time	2.50	0.10
Total:				=====5.00=====	0.20

Last Update: 02/11/98  
Initial Proposal: 1994

Project Statement

BUFF-C-155.000  
Priority: 999  
Page Num: 0042

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	5.00	0.10
Year 2:	RES	One-time	5.00	0.10
Total:			=====	
			10.00	0.20

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

	Project Statement	BUFF-C-161.000
Last Update: 02/12/98		Priority: 999
Initial Proposal: 1994		Page Num: 0043

Title : PREPARE NATIONAL REGISTER NOM.FOR ERBIE CHURCH

Funding Status: Funded: 0.00 Unfunded: 18.00

Servicewide Issues : C36 (NR DOCMNT)  
 Cultural Resource Type: STRC (Structure)  
 N-RMAP Program codes :

10-238 Package Number : 152

#### Problem Statement

The Erbie Church has been in use as a church building since 1897. The church is a typical Ozark country church and the last surviving structure of the town of Erbie. The last congregation (operating under a special use permit) outgrew the building and in 1992 left for a new location, leaving the church vacant. A formal assessment for determination of eligibility for the National Register is needed. The church is on the CLS and is considered a major structure in the Erbie Historic Zone. The park is committed to maintaining the church building.

#### Description of Recommended Project or Activity

Eligibility for the National Register should be determined in order to guide future use of the building.

#### BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	18.00	0.20
			=====	
Total:			18.00	0.20

(Optional) Alternative Actions/Solutions and Impacts  
 (No information provided)

	Project Statement	BUFF-C-161.000
Last Update: 02/12/98		Priority: 999
Initial Proposal: 1994		Page Num: 0044

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(9)

Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-162.000  
Priority: 21  
Page Num: 0045

Title : PREPARE NATL REGISTER NOMINATION, COLLIER HOMESTEAD

Funding Status: Funded: 0.00 Unfunded: 20.00

Servicewide Issues : C36 (NR DOCMNT)  
Cultural Resource Type: COMB (Combination)  
N-RMAP Program codes :

10-238 Package Number : 154

Problem Statement

The Collier Homestead was ruled eligible for the National Register of Historic Places in 1990 by the State Historic Preservation Officer, but a formal nomination has not been submitted. The completion of the Nomination would not only fulfill cultural requirements, but the information could be used for interpretation of the Homestead. The boundaries of the district need to be set in order to manage potential impacts.

Description of Recommended Project or Activity

Fund and complete a National Register nomination for the Collier Homestead as a Historic District or rural historic landscape.

BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
		Total:	0.00	0.00
		-----UNFUNDED-----		
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	20.00	0.20
			=====	
		Total:	20.00	0.20

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

	Project Statement	BUFF-C-162.000
Last Update: 02/12/98		Priority: 21
Initial Proposal: 1994		Page Num: 0046

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(9)

	Project Statement	BUFF-C-170.000
Last Update: 02/17/98		Priority: 999
Initial Proposal: 1994		Page Num: 0047

Title : INPUT CULTURAL RESOURCES DATA INTO GIS

Funding Status: Funded: 0.00 Unfunded: 25.00

Servicewide Issues : C62 (GIS)  
 Cultural Resource Type: COMB (Combination)  
 N-RMAP Program codes :

10-238 Package Number :

### Problem Statement

Mylar overlays on paper resource base maps are currently used to identify cultural resource structures and sites. Integration of this information into GIS would greatly expand the use which can be made of the material. As the LCS and other inventory documents are completed, that data should be added to GIS. The introduction of this basic information on GIS would aid future research in determining prehistoric and historic site areas and structure locations, as well as providing a baseline comparison for historical material such as Government Land Office surveys and 1930s aerial surveys.

### Description of Recommended Project or Activity

As GIS is developed for the National River, cultural resources data should be imputed into the database for use in future management and research.

#### BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
		Total:	0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	10.00	0.20
Year 2:	RES	One-time	5.00	0.10
Year 3:	RES	One-time	5.00	0.10
Year 4:	RES	One-time	5.00	0.10



Last Update: 02/17/98  
Initial Proposal: 1994

Project Statement

BUFF-C-170.000  
Priority: 999  
Page Num: 0048

	=====	
Total:	25.00	0.50

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

	Project Statement	BUFF-C-172.000
Last Update: 02/11/98		Priority: 999
Initial Proposal: 1994		Page Num: 0049

Title : IMPLEMENT USE OF LCS DATA

Funding Status: Funded: 0.00 Unfunded: 2.00

Servicewide Issues : C51 (LCS)  
 Cultural Resource Type: STRC (Structure)  
 N-RMAP Program codes :

10-238 Package Number :

#### Problem Statement

In the past 20 years a number of recording systems have been tried by various park divisions having responsibility for structures. There is no "correct" list. Part of the problem has evolved from the lengthy park land acquisition history where tract ownership became the easy identifier for structure location and "old buildings" were frequently disregarded. Resource management, protection, and maintenance lists do not coincide in structure name, number, or significance. With the completion of the LCS for Buffalo National River, this data needs to be integrated with maintenance and other management lists so that all divisions are referencing the same structures the same way. This would also help in responding to the the various requests for structure information.

#### Description of Recommended Project or Activity

Integrate the information on the LCS with other park management lists, utilizing the data on the LCS.

#### BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
		Total:	0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	2.00	0.10
			=====	
		Total:	2.00	0.10

	Project Statement	BUFF-C-172.000
Last Update: 02/11/98		Priority: 999
Initial Proposal: 1994		Page Num: 0050

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

	Project Statement	BUFF-C-173.000
Last Update: 02/12/98		Priority: 26
Initial Proposal: 1994		Page Num: 0051

Title : PREPARE HISTORIC FURNISHING STUDY, CCC CABINS

Funding Status: Funded: 0.00 Unfunded: 30.00

Servicewide Issues : C44 (HIS FURN)  
 Cultural Resource Type: OBJC (Object)  
 N-RMAP Program codes :

10-238 Package Number : 153

#### Problem Statement

The six Civilian Conservation Corps cabins used for concession operation at the park are listed on the National Register. Although the cabins' exterior design has been assessed for National Register criteria, the interior design and furnishings were not. The interior rustic design features are as much a part of the building's character as the exteriors. The furnishings include most of the original wood furniture designed for the cabins and constructed by the CCC, fireplace design, features, window rods and trim, and kitchen design. Despite fifty years of use and repairs, the cabins still retain substantial interior integrity, but this integrity is in danger of being lost. The present concessionaire has requested updating the cabin interiors to more modern comforts. Furniture is wearing out and will need replacement. Previous repairs, including some by the National River, already have compromised the cabin interiors.

#### Description of Recommended Project or Activity

A Historic Furnishings Report should be undertaken to identify defining features of the cabin interiors, housekeeping concerns, and address eventual replacement of pieces. Preservation responsibility and methods need to be established for the CCC furniture. Representative furniture pieces may need curation and conservation once replica pieces can be fabricated. (see related Project Statements C-261, C-231, C-135).

#### BUDGET AND FTEs:

-----FUNDED-----					
Source	Activity	Fund Type	Budget (\$1000s)	FTEs	
			=====		
Total:			0.00	0.00	

	Project Statement	BUFF-C-173.000
Last Update: 02/12/98		Priority: 26
Initial Proposal: 1994		Page Num: 0052

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	30.00	0.20
			=====	
		Total:	30.00	0.20

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(2)

	Project Statement	BUFF-C-174.000
Last Update: 02/12/98		Priority: 999
Initial Proposal: 1994		Page Num: 0053

Title : EVALUATE CEMETERIES AS CULTURAL RESOURCES

Funding Status: Funded: 0.00 Unfunded: 20.00

Servicewide Issues : C70 (ENVRM IMPCT)  
C22 (USE STUDY)  
Cultural Resource Type: COMB (Combination)  
N-RMAP Program codes :

10-238 Package Number : 156

#### Problem Statement

Cemeteries at Buffalo River are valuable cultural resources, as well as being deeply tied to the traditions of Buffalo River residents. National River actions affecting these cemeteries need to be assessed and evaluated. The wilderness unit limitations have engendered much controversy regarding access. Cemeteries identified along the park trail system are vulnerable to visitor abuse. Cemeteries owned in fee without family caretakers are deteriorating from lack of maintenance. An evaluation of the cemeteries as to access, resource value, National Register eligibility, preservation needs, and recommended mitigation needs to be initiated. The "stones" at eighteen cemeteries are listed on the LCS.

#### Description of Recommended Project or Activity

Prepare an evaluation of cemeteries as resources and identify potential impacts on these resources from current park actions. Recommend mitigation and other management action to protect the resource and show sensitivity to local cultural concerns. An Ethnographic Traditional Use Study may be the appropriate study. However, this will require expertise from outside the park staffing. Related project is C-114.

#### BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00

	Project Statement	BUFF-C-174.000
Last Update: 02/12/98		Priority: 999
Initial Proposal: 1994		Page Num: 0054

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	10.00	0.10
Year 2:	RES	One-time	10.00	0.10
			=====	
	Total:		20.00	0.20

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(10)

Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-181.000  
Priority: 23  
Page Num: 0055

Title : DOCUMENT RUSH HISTORIC DISTRICT TO HAER STANDARDS

Funding Status: Funded: 0.00 Unfunded: 120.00

Servicewide Issues : C63 (HIS BASE MP)  
C57 (SPEC STUDY)

Cultural Resource Type: CULL (Cultural Landscape)  
N-RMAP Program codes :

10-238 Package Number :

Problem Statement

The 1300 acre Rush Historic District was entered on the National Register for the overall cohesiveness of its combination of mining facilities and community structures and ruins and the overall information potential of those remains. An initial field survey of the entire district was completed in 1984-85 as part of the Rush Historic Structure Report (Draft, 1985). A comprehensive graphic study of the Rush district needs to be completed, at a level equivalent to existing HAER standards. Information contained in the district layout and materials is rapidly being altered or lost due to increased visitor use and natural deterioration. This study would also identify vulnerable resource areas for consideration in future management decisions.

Description of Recommended Project or Activity

Fund a HAER or equivalent study to map the Rush district and record and document significant structures and ruins and mining areas.

BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	40.00	1.00
Year 2:	RES	One-time	40.00	1.00
Year 3:	RES	One-time	40.00	1.00



Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-181.000  
Priority: 23  
Page Num: 0056

	=====	
Total:	120.00	3.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(10)

Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-211.000  
Priority: 999  
Page Num: 0057

Title : PREPARE HISTORIC STRUCTURE REPORT COLD SPRINGS SCHO

Funding Status: Funded: 0.00 Unfunded: 15.00

Servicewide Issues : C57 (SPEC STUDY)  
C55 (MAINTENANCE)

Cultural Resource Type: STRC (Structure)

N-RMAP Program codes :

10-238 Package Number :

Problem Statement

Cold Springs School has not received any maintenance since its addition to the National River. As a National Register property, a maintenance plan and a preservation plan need to be prepared for this structure. Since the structure is in wilderness, maintenance schedules will have to conform to wilderness requirements. As the school is frequently used for overnight lodging (though not officially sanctioned) by individuals using the wilderness area, the preservation plan needs to address this use.

Description of Recommended Project or Activity

Prepare a Historic Structure Report and routine maintenance plan for the Cold Springs School. The plan must consider the limitations of the wilderness use, as well as the informal use of the structure for shelter. See project C221 for emergency stabilization.

BUDGET AND FTEs:

Source		Activity	Fund Type	Budget (\$1000s)	FTEs
			Total:	0.00	0.00
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time		15.00	0.20
			Total:	15.00	0.20

Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-211.000  
Priority: 999  
Page Num: 0058

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : NHPA ((106) NAT. HIST. PRES.)

Explanation:

	Project Statement	BUFF-C-212.000
Last Update: 02/12/98		Priority: 17
Initial Proposal: 1994		Page Num: 0059

Title : PREPARE PARKER-HICKMAN PRESERVATION GUIDELINES

Funding Status: Funded: 0.00 Unfunded: 10.00

Servicewide Issues : C55 (MAINTENANCE)  
C57 (SPEC STUDY)  
Cultural Resource Type: STRC (Structure)  
N-RMAP Program codes :

10-238 Package Number : 157

#### Problem Statement

The Parker-Hickman Farm, listed on the National Register, has been evaluated as one of the finest examples of log architecture in the region. The preservation work performed on the structures in 1984 by the Williamsport Training center is the single main reason for the present good condition of these significant cultural resources. It is essential that preservation guidelines and a preservation maintenance plan be developed and implemented instead of the present policy of repairs being made as problems arise.

#### Description of Recommended Project or Activity

Develop preservation guidelines and implement a regular plan of preservation maintenance for these structures. Utilize the knowledge of Mr. Robert Hickman, the surviving family caretaker of these structures, for information about recent (pre-park) construction and repairs. There is no one on the park staff with the expertise to develop preservation guidelines. If a historical architect or exhibits specialist were added to the park staff, guideline could be prepared in park. A related project is Project C-133, completion of the Historic Structure Report, which still (since 1987) lacks the architectural section.

#### BUDGET AND FTEs:

-----FUND-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00

Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-212.000  
Priority: 17  
Page Num: 0060

-----UNFUNDED-----  
Activity Fund Type Budget (\$1000s) FTEs  
Year 1: MIT One-time 10.00 0.20  
Total: =====  
10.00 0.20

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(2)

	Project Statement	BUFF-C-213.000
Last Update: 02/12/98		Priority: 999
Initial Proposal: 1994		Page Num: 0061

Title : PREPARE PRESERVATION GUIDELINES, REAVIS LOG HOUSE

Funding Status: Funded: 0.00 Unfunded: 10.00

Servicewide Issues : C57 (SPEC STUDY)  
C55 (MAINTENANCE)

Cultural Resource Type: STRC (Structure)

N-RMAP Program codes :

10-238 Package Number :

#### Problem Statement

The John Reavis House, also known as the Chestnut Cabin, is used by the National River to house persons permitted to explore Fitton Cave. The cabin is a historic structure (on the List of Classified Structures) which is being adaptively used. However, no guidelines exist for maintenance of this structure beyond that used for non historic buildings at the park.

#### Description of Recommended Project or Activity

Prepare preservation guidelines for the Reavis/Chestnut Cabin.

#### BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	10.00	0.10
			=====	
Total:			10.00	0.10

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-213.000  
Priority: 999  
Page Num: 0062

Compliance codes : NHPA ((106) NAT. HIST. PRES.)

Explanation:

Last Update: 02/17/98  
Initial Proposal: 1994

# Project Statement

BUFF-C-221.000  
Priority: 999  
Page Num: 0063

Title : PRESERVE COLD SPRINGS SCHOOL

Funding Status: Funded: 0.00 Unfunded: 50.00

Servicewide Issues : C54 (EMERG STABL)  
Cultural Resource Type: STRC (Structure)  
N-RMAP Program codes :

10-238 Package Number :

## Problem Statement

Cold Springs School has not received any maintenance since its addition to the National River. This is a stone and wood WPA structure which can not go much longer without some kind of maintenance. The porch supports are crumbling. Numerous window panes are cracked. Interior walls have cracks in the plaster. The pressed tin ceiling should be preserved. This structure is occasionally used by wilderness campers. The building is in need of immediate preservation work. As the building is within wilderness, all preservation will have to be performed by hand tools and without vehicular access.

## Description of Recommended Project or Activity

Begin emergency preservation work on Cold Springs School. Use completed Historic Structure Report [project C211] to implement routine maintenance plan.

### BUDGET AND FTEs:

Source		Activity	FUND Type	Budget (\$1000s)	FTEs
			FUNDED		
				0.00	0.00
			UNFUNDED		
		Activity	FUND Type	Budget (\$1000s)	FTEs
Year 1:		MIT	One-time	20.00	0.50
Year 2:		MIT	One-time	20.00	0.50
Year 3:		MIT	One-time	10.00	0.20
				50.00	1.20



Last Update: 02/17/98  
Initial Proposal: 1994

Project Statement

BUFF-C-221.000  
Priority: 999  
Page Num: 0064

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : NHPA ((106) NAT. HIST. PRES.)

Explanation:

Last Update: 02/12/98  
Initial Proposal: 1994

# Project Statement

BUFF-C-222.000  
Priority: 19  
Page Num: 0065

Title : PRESERVE ERBIE CHURCH

Funding Status: Funded: 6.00 Unfunded: 40.00

Servicewide Issues : C54 (EMERG STABL)  
C55 (MAINTENANCE)

Cultural Resource Type: STRC (Structure)  
N-RMAP Program codes :

10-238 Package Number : 152

## Problem Statement

PROBLEM STATEMENT: The Erbie Church has received limited maintenance since its addition to the National River. Most of the maintenance has been performed by previous church congregations using the church under a special use permit. Now that the building is vacant, NPS preservation maintenance will be needed to care for the building so that it does not deteriorate further. The roof and foundation are in particular need of repairs. Numerous other design elements, such as the doors, windows, and siding will need preservation also. Preservation is essential now to safeguard the building. Cyclic monies were received to repaint the building this year. This building is on the List of Classified Structures. (Related Project Statement is C-161).

## Description of Recommended Project or Activity

Provide emergency preservation to the Erbie Church while the Historic Structure Report and National Register nomination is prepared. See projects 136 and 161. Prepare a routine maintenance plan for this structure.

## BUDGET AND FTEs:

Source		Activity	FUND Type	Budget (\$1000s)	FTEs
1998:	RG-CR-MTN	MIT	One-time	6.00	0.20
Total:				6.00	0.20

Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-222.000  
Priority: 19  
Page Num: 0066

-----UNFUNDED-----

	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MIT	Cyclic	20.00	0.50
Year 2:	MIT	Cyclic	15.00	0.50
Year 3:	MIT	Cyclic	5.00	0.10
		Total:	===== 40.00	1.10

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : NHPA ((106) NAT. HIST. PRES.)

Explanation:

	Project Statement	BUFF-C-231.000
Last Update: 02/12/98		Priority: 27
Initial Proposal: 1994		Page Num: 0067

Title : PRESERVE CCC STRUCTURES

Funding Status: Funded: 0.00 Unfunded: 80.00

Servicewide Issues : C56 (REHAB, ETC.)  
C85 (STRUCTURES)  
Cultural Resource Type: STRC (Structure)  
N-RMAP Program codes :

10-238 Package Number : 153

#### Problem Statement

PROBLEM STATEMENT: After fifty years of use the CCC structures at Buffalo Point are in need of more frequent repair. Preservation guidelines were drawn up in 1993 to help plan for routine maintenance of the rental cabin exteriors, but these plans need to be implemented on a routine basis. Extensive preservation work is needed on each structure. The cabins are of varying design; this interplay of wood and rock is part of their National Register significance and needs special attention. Other structural elements include the park road system, including retaining walls, culverts, and walkways. A Williamsport sponsored training course repaired part of one rock retaining wall, but the remainder of the wall still needs to be completed, as well as repairs to collapsing portions of other road sections.

#### Description of Recommended Project or Activity

Implement the routine maintenance plan for the CCC structures and continue needed repairs to all CCC structures as per the Secretary's Guidelines. Repair work should preserve the historic design components of the structures. Establishment of a park historical architect or exhibit specialist position to guide and monitor cyclic work and plan for preventative maintenance is preferred. (Related project statements are C-173, C-235, C-261).

#### BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00

Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-231.000  
Priority: 27  
Page Num: 0068

-----UNFUNDED-----

	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	ADM	Recurring	10.00	0.20
	MIT	Cyclic	20.00	0.50
		Subtotal:	30.00	0.70
Year 2:	ADM	Recurring	5.00	0.10
	MIT	Cyclic	15.00	0.30
		Subtotal:	20.00	0.40
Year 3:	ADM	Recurring	5.00	0.10
	MIT	Cyclic	10.00	0.20
		Subtotal:	15.00	0.30
Year 4:	ADM	Recurring	5.00	0.10
	MIT	Cyclic	10.00	0.20
		Subtotal:	15.00	0.30
		Total:	80.00	1.70

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : NHPA ((106) NAT. HIST. PRES.)

Explanation:

Last Update: 02/17/98  
Initial Proposal: 1994

# Project Statement

BUFF-C-235.000  
Priority: 999  
Page Num: 0069

Title : MITIGATE AND INTERPRET RUSH MINES

Funding Status: Funded: 0.00 Unfunded: 300.00

Servicewide Issues : C54 (EMERG STABL)  
C72 (PROTECTION)  
Cultural Resource Type: STRC (Structure)  
N-RMAP Program codes :

10-238 Package Number :

## Problem Statement

The thirteen abandoned mining areas of the Rush Historic District present significant safety hazards, as well as significant interpretive opportunities. A fencing project in 1988 failed to reduce visitation to the mines. Increased interpretation efforts (including a constructed trail system) in the area may have made the mines even more attractive as cultural features. The entire Rush area is nationally known as a major geological site: before the park imposed closures, the mines were regularly explored by individuals and university groups. The mines are contributing structures to the Rush Historic District. In 1992 the park, with assistance from the Region and WASO, initiated a new assessment of the mines' stability and safety considerations. This culminated in recommendations for mitigation that would effectively restrict entrance, but would not intrude on the cultural landscape. An EA was prepared for this project in 1993 and the first mitigation--bat gates--completed. However, over 60 more openings remain that need mitigation measures.

## Description of Recommended Project or Activity

Continue seeking funding to continue the gating project. The effect on the cultural landscape and any opportunity to continue interpretation of the mining area should be considered. See related project N-221.

## BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00

Last Update: 02/17/98  
Initial Proposal: 1994

Project Statement

BUFF-C-235.000  
Priority: 999  
Page Num: 0070

-----UNFUNDED-----

	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MIT	One-time	100.00	1.00
Year 2:	MIT	One-time	100.00	1.00
Year 3:	MIT	One-time	100.00	1.00
		Total:	===== 300.00	3.00

(Optional) Alternative Actions/Solutions and Impacts

The hazardous nature of the mine openings and the ease of access for visitors in a high use area could lead to serious threats to human life if action is not taken.

Compliance codes : EA (ENV. ASSESSMENT)  
NHPA ((106) NAT. HIST. PRES.)

Explanation:

Last Update: 02/12/98  
Initial Proposal: 1994

# Project Statement

BUFF-C-250.000  
Priority: 999  
Page Num: 0071

Title : RESTORE COLLIER HOMESTEAD/LANDSCAPE

Funding Status: Funded: 1.60 Unfunded: 17.00

Servicewide Issues : C54 (EMERG STABL)  
C13 (EMERG STABL)  
Cultural Resource Type: COMB (Combination)  
N-RMAP Program codes :

10-238 Package Number : 154

## Problem Statement

The 1930s Collier Homestead, eligible for the National Register, has received emergency stabilization since 1987 to clear safety hazards from this site. The Southwest Regional Preservation Team provided the most extensive work in November 1991, with other work being completed by volunteers. Other work remains to be done at this site, particularly since the homestead is a feature on the handicapped accessible trail. Funding is needed to continue preservation of the structures and the grounds. The site is the main interpretive cultural site in the middle district of the park and is adjacent to the only park visitor center; thus it is receiving increased visitation. Restoration at the site will need to be more than minimal stabilization to meet the visitation and interpretive needs.

## Description of Recommended Project or Activity

Continue emergency preservation of site until HSR [recommended in project C134] and CLR [project C142] can be completed. Use volunteers to maintain and protect site until park preservation maintenance program can be effected. Continue to seek funding for planned restoration of site given recommendations of HSR.

### BUDGET AND FTEs:

		-----FUNDED-----			
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1994:	VOL-IN-PK	MIT	Recurring	0.20	0.10
	VOL-IN-PK	MON	Recurring	0.20	0.10
				-----	-----
		Subtotal:		0.40	0.20



Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-250.000  
Priority: 999  
Page Num: 0072

1995:	VOL-IN-PK MIT	Recurring	0.20	0.10
	VOL-IN-PK MON	Recurring	0.20	0.10
		Subtotal:	0.40	0.20
1996:	VOL-IN-PK MIT	Recurring	0.20	0.10
	VOL-IN-PK MON	Recurring	0.20	0.10
		Subtotal:	0.40	0.20
1997:	VOL-IN-PK MIT	Recurring	0.20	0.10
	VOL-IN-PK MON	Recurring	0.20	0.10
		Subtotal:	0.40	0.20
		Total:	1.60	0.80

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MIT	One-time	10.00	0.20
	MIT	Recurring	1.00	0.05
		Subtotal:	11.00	0.25
Year 2:	MIT	One-time	5.00	0.20
	MIT	Recurring	1.00	0.05
		Subtotal:	6.00	0.25
		Total:	17.00	0.50

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : NHPA ((106) NAT. HIST. PRES.)

Explanation:





Last Update: 02/12/98  
Initial Proposal: 1994

## Project Statement

BUFF-C-261.000  
Priority: 999  
Page Num: 0073

Title : PRESERVE CCC FURNITURE

Funding Status: Funded: 0.00 Unfunded: 10.00

Servicewide Issues : C48 (TREATMENT)  
Cultural Resource Type: OBJC (Object)  
N-RMAP Program codes :

10-238 Package Number : 153

## Problem Statement

Most of the furniture still in use for the concession-operated Civilian Conservation Corps cabins is the original wood furniture designed for the cabins and built by the CCC. The furniture has been carried on the park concession inventory, but recorded and valued as depreciated furniture. In 1992 an inventory was made of the CCC furniture to determine styles, quality, and condition. Although these pieces have survived almost fifty years of use, they are beginning to wear out. Preservation and repairs have been left to the concessionaire without any attempt to guide preservation. No pieces have been curated as representative samples. No provision has been made for the eventual replacement of these pieces.

## Description of Recommended Project or Activity

Guidelines for care and preservation of the CCC pieces should be written, probably as part of a Historic Furnishings Study (Project Statement C-173). Representative pieces need curation into the park collection. Preservation responsibility needs to be addressed. Repair and replacement of some furniture pieces is already needed. Currently, there are local Ozark artisans with the skills to create appropriate rustic pieces for replacement.

### BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MIT	Cyclic	4.00	0.10

Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-261.000  
Priority: 999  
Page Num: 0074

Year 2:	MIT	Cyclic	2.00	0.10
Year 3:	MIT	Cyclic	2.00	0.10
Year 4:	MIT	Cyclic	2.00	0.10
Total:			10.00	0.40

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : NHPA ((106) NAT. HIST. PRES.)

Explanation:

Last Update: 02/12/98  
Initial Proposal: 1994

# Project Statement

BUFF-C-270.000  
Priority: 999  
Page Num: 0075

Title : PROVIDE ROUTINE MAINT. FOR HISTORIC STRUCTURES

Funding Status: Funded: 4.50 Unfunded: 100.00

Servicewide Issues : C55 (MAINTENANCE)  
C85 (STRUCTURES)  
Cultural Resource Type: STRC (Structure)  
N-RMAP Program codes :

10-238 Package Number :

## Problem Statement

Currently the park has 256 structures recorded on the LCS. Most of these are considered contributing structures to National Register districts. Most of these structures are within visitor use areas and require routine maintenance and plan for repairs. A routine maintenance schedule has never been implemented for these structures (with the exception of grounds mowing). Repairs have been difficult to make on any kind of timely basis. Needed repairs can remain undone for months on end, contributing to additional deterioration to structures and a message to park visitors of neglect and an undervaluing of the resource. This also lead to increased vandalism. Volunteer workers have provided much of the maintenance and repairs done on historic structures.

## Description of Recommended Project or Activity

Funding is needed for the approved exhibits specialist position. A maintenance plan needs to be developed and implemented for historic resources just as there is for other park facilities. Projects C212, 221, 222, and 231 are related to this project.

### BUDGET AND FTEs:

	Source	Activity	FUND Type	Budget (\$1000s)	FTEs
1995:	PKBASE-CR MIT		Recurring	1.00	0.10
	VOL-IN-PK MIT		Recurring	0.50	0.20
			Subtotal:	1.50	0.30

Last Update: 02/12/98  
Initial Proposal: 1994

# Project Statement

BUFF-C-270.000  
Priority: 999  
Page Num: 0076

1996:	PKBASE-CR MIT	Recurring	1.00	0.10
	VOL-IN-PK MIT	Recurring	0.50	0.20
		Subtotal:	1.50	0.30
1997:	PKBASE-CR MIT	Recurring	1.00	0.10
	VOL-IN-PK MIT	Recurring	0.50	0.10
		Subtotal:	1.50	0.20
		Total:	4.50	0.80

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MIT	Recurring	40.00	1.00
Year 2:	MIT	Recurring	20.00	0.50
Year 3:	MIT	Recurring	20.00	0.50
Year 4:	MIT	Recurring	20.00	0.50
		Total:	100.00	2.50

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 C(4)

Last Update: 02/17/98  
Initial Proposal: 1994

## Project Statement

BUFF-C-320.000  
Priority: 999  
Page Num: 0077

Title : MONITOR HISTORIC RESOURCES

Funding Status: Funded: 22.00 Unfunded: 40.00

Servicewide Issues : C85 (STRUCTURES)  
C71 (VISIT IMPCT)  
Cultural Resource Type: COMB (Combination)  
N-RMAP Program codes :

10-238 Package Number :

## Problem Statement

Monitoring the condition of and impacts to historic resources is essential to preservation. The relative isolation of and limited access to many structures at the National River makes it difficult to have even monthly checks of each resource under the present staffing. Consequently, vandalism or other threats could go unreported for some time. Baseline photographic documentation has been prepared for the most significant structures in order to better monitor changes. This information (along with training) has been provided to other divisions (particularly law enforcement personnel) to help in evaluating problems. Volunteers have also adopted specific resources or assisted in visits to sites. Cultural personnel update the documentation at intervals or as damage or preservation occurs and provide professional recommendations for preservation concerns.

## Description of Recommended Project or Activity

Continue exploring methods for more efficient monitoring, including establishment of a cultural resources assistant position. Continue to utilize other divisions and volunteers for assistance in monitoring resources. Continue to make available the visual documentation binders and information on vulnerable features for the resources of each district as a quick reference to status quo and condition of a resource and information on significance and vulnerability. This effort may increase field appreciation of these resources, as well as assist cultural staff in monitoring condition and threats. Cultural staff will continue to document resource condition and coordinate monitoring reports from other divisions. Funding is needed to update and expand the photographic documentation for all historic structures, and maintain monitoring records.



Last Update: 02/17/98  
Initial Proposal: 1994

# Project Statement

BUFF-C-320.000  
Priority: 999  
Page Num: 0078

## BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1994:	PKBASE-CR	MON	Recurring	4.00	0.10
	TEMP\$-CR	MON	Recurring	2.00	0.10
			Subtotal:	6.00	0.20
1995:	PKBASE-CR	MON	Recurring	4.00	0.10
	TEMP\$-CR	MON	Recurring	2.00	0.10
			Subtotal:	6.00	0.20
1996:	PKBASE-CR	MON	Recurring	4.00	0.10
	TEMP\$-CR	MON	Recurring	2.00	0.10
			Subtotal:	6.00	0.20
1997:	PKBASE-CR	MON	Recurring	4.00	0.10
			Total:	22.00	0.70
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MON	Recurring	10.00	0.20
Year 2:		MON	Recurring	10.00	0.20
Year 3:		MON	Recurring	10.00	0.20
Year 4:		MON	Recurring	10.00	0.20
			Total:	40.00	0.80

## (Optional) Alternative Actions/Solutions and Impacts

Intrusion monitoring devices could be installed at sites where vandalism becomes an increased problem. At present, structures are left open to the public; experience has shown that vandalism increases when structures are locked

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.5

Last Update: 02/12/98  
Initial Proposal: 1994

## Project Statement

BUFF-C-321.000  
Priority: 29  
Page Num: 0079

Title : MONITOR PRESERVATION WORK, BOXLEY VALLEY

Funding Status: Funded: 56.00 Unfunded: 85.00

Servicewide Issues : C85 (STRUCTURES)  
C61 (LEASING)  
Cultural Resource Type: COMB (Combination)  
N-RMAP Program codes :

10-238 Package Number : 151

## Problem Statement

Now that implementation of the Boxley Valley Land Use Plan/Cultural Landscape Report is in progress, monitoring of the various sellback land exchanges and leases in the valley has begun. Seven farms have been returned to private ownership with restrictive preservation easements; five farms are under historic leases. Three additional farms may be returned to private ownership. These properties contain over 50 National Register structures which must be maintained, as well as the 8000 acre cultural and ethnographic landscape. All actions on these properties must be monitored for cultural and environmental compliance by National River personnel and must be done with a high degree of diplomacy. This entails preparing compliance documents, on site visits and documentation, technical assistance, and acting as liaison between the park and the landowner/lessee. The park staff lacks a professional position in historic structure preservation and in cultural landscape management. The present cultural resources staff can not effectively assist a living community the size of Boxley without other assistance. All resource management personnel are located at a distance from Boxley. Basic monitoring can consume a large portion of time. Good communication is essential to effectively managing Boxley Valley. Park cultural and natural resource management personnel will need to work closely to develop management strategies for an area for which traditional agricultural and community lifestyles are now joined to the mandate to preserve the natural qualities of National River.

## Description of Recommended Project or Activity

Staff an additional cultural resource position, preferably a historical architect or exhibit specialist, to provide necessary technical assistance and guidance for Boxley citizens as they preserve, adapt, and restore their structures and landscape under the Secretary's Guidelines and the terms of their deed restrictions. Continue to develop communication between the park and community in achieving management goals.

Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-321.000  
Priority: 29  
Page Num: 0080

BUDGET AND FTEs:

			-----FUNDED-----		
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1994:	PKBASE-CR	MON	Recurring	2.00	0.10
	TEMP\$-CR	MON	Recurring	2.00	0.10
	TEMP\$-CR	ADM	Recurring	10.00	0.20
			Subtotal:	14.00	0.40
1995:	PKBASE-CR	MON	Recurring	2.00	0.10
	TEMP\$-CR	MON	Recurring	2.00	0.10
	TEMP\$-CR	ADM	Recurring	10.00	0.20
			Subtotal:	14.00	0.40
1996:	PKBASE-CR	MON	Recurring	2.00	0.10
	TEMP\$-CR	MON	Recurring	2.00	0.10
	TEMP\$-CR	ADM	Recurring	10.00	0.20
			Subtotal:	14.00	0.40
1997:	PKBASE-CR	MON	Recurring	2.00	0.10
	TEMP\$-CR	MON	Recurring	2.00	0.10
	TEMP\$-CR	ADM	Recurring	10.00	0.20
			Subtotal:	14.00	0.40
			Total:	56.00	1.60
			-----UNFUNDED-----		
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MON	Recurring	10.00	0.50
		ADM	Recurring	10.00	0.20
			Subtotal:	20.00	0.70
Year 2:		MON	Recurring	10.00	0.50
		ADM	Recurring	10.00	0.20
			Subtotal:	20.00	0.70
Year 3:		MON	Recurring	10.00	0.50
		ADM	Recurring	10.00	0.20
			Subtotal:	20.00	0.70
Year 4:		MON	Recurring	15.00	0.50
		ADM	Recurring	10.00	0.20
			Subtotal:	25.00	0.70

Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-321.000  
Priority: 29  
Page Num: 0081

	=====	
Total:	85.00	2.80

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.5

Last Update: 02/12/98  
Initial Proposal: 1994

## Project Statement

BUFF-C-360.000  
Priority: 999  
Page Num: 0082

Title : MONITOR PREHISTORIC ARCHEOLOGICAL RESOURCES

Funding Status: Funded: 5.00 Unfunded: 40.00

Servicewide Issues : C06 (SITE MONIT)  
C96 (ENFORCE, ETC)  
Cultural Resource Type: SITE (Archeological Site)  
N-RMAP Program codes :

10-238 Package Number : 116

## Problem Statement

The rich archeological resources at Buffalo National River have been known for many years; "arrowhead hunting" and human burial desecration are established pastimes. Additionally, the bluff shelters have provided marketable artifacts for pot hunters. At least three times a year evidence of a new looting is discovered during park patrols. The law enforcement rangers and other staff have received ARPA training. Known archeological sites have been marked on base maps to assist the law enforcement staff in locating known archeological sites. There has been no assessment of site condition or site vulnerability. A site monitoring program and site vulnerability assessment program need to be established and implemented. Only then can the Park create a baseline from which ARPA and NAGPRA court cases can have positive conviction results. This project is identified as GPRA goal 1a9, Archeological Site Monitoring Schedule.

## Description of Recommended Project or Activity

Implement a site vulnerability assessment plan that is integrated into a site monitoring schedule. Archeological sites have been recreationally dug for 100 years, and continues today. The Park will aggressively monitor looted sites with remote sensing equipment and accurate GIS surveys of damaged areas. Damage assessments will be made of each looted site. Restoration estimates and recovery assessments will be conducted which will all support the legal proceedings that should develop from the increased technology and physical monitoring of the looted sites throughout the park.

Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-360.000  
Priority: 999  
Page Num: 0083

BUDGET AND FTEs:

-----FUNDED-----					
Source	Activity	Fund Type	Budget (\$1000s)	FTEs	
1997:	PKBASE-OT	MON	Recurring	5.00	0.10
			Total:	5.00	0.10
=====					
-----UNFUNDED-----					
	Activity	Fund Type	Budget (\$1000s)	FTEs	
Year 1:	MON	Cyclic	10.00	0.20	
Year 2:	MON	Cyclic	10.00	0.20	
Year 3:	MON	Cyclic	10.00	0.20	
Year 4:	MON	Cyclic	10.00	0.20	
			Total:	40.00	0.80
=====					

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : ARPA (ARCH. RES. PROT. ACT.)  
NHPA ((106) NAT. HIST. PRES.)

Explanation: NAGPRA

Last Update: 02/12/98  
Initial Proposal: 1994

# Project Statement

BUFF-C-410.000  
Priority: 24  
Page Num: 0084

Title : PREPARE ETHNOGRAPHIC OVERVIEW

Funding Status: Funded: 0.00 Unfunded: 40.00

Servicewide Issues : C21 (OVERVIEW)  
C29 (PRGM STRATG)  
Cultural Resource Type: ETHN (Ethnographic Resources)  
N-RMAP Program codes :  
10-238 Package Number :

## Problem Statement

The limited research done to date at Buffalo National River has indicated that its distinctive Ozark mountain culture is a product of cultural traditions transplanted from an Appalachian tradition, with a very strong association through kinship lines with the Cherokee and Shawnee [Buffalo River was included within treaty lands granted to the Cherokee from 1817 to 1828. Many Buffalo River families also have tribal membership based on old kinship lines.], which have been transformed through the isolation of the river into a distinct cultural style. The individual nuances of this cultural development has not been adequately explored, with the result that park interpretation tends to lean on the popular image of country crafts without looking at the unique characteristics of the area. Also, distinct cultural and historical lines along the National River boundaries should be identified.

## Description of Recommended Project or Activity

An ethnographic overview is needed to identify resources which contribute to an understanding of this tradition. See project statement C422 for a related project.

### BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	20.00	0.30

Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-410.000  
Priority: 24  
Page Num: 0085

Year 2:	RES	One-time	20.00	0.10
			=====	
		Total:	40.00	0.40

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(10)



Last Update: 02/13/98  
Initial Proposal: 1998

# Project Statement

BUFF-C-410.001  
Priority: 2  
Page Num: 0086

Title : NATIVE AMERICAN ETHNOGRAPHY OF THE BUFFALO RIVER VY  
Sub-title:

Funding Status: Funded: 0.00 Unfunded: 75.00

Servicewide Issues : C21 (OVERVIEW)  
Cultural Resource Type: ETHN (Ethnographic Resources)  
N-RMAP Program codes :

10-238 Package Number :

## Problem Statement

Native Americans have occupied Buffalo River Valley for over ten thousand years. We have material evidence that suggests three contemporaneous Native groups visited the area if not resided in the valley. We also have the forced migration route for the Cherokee Indians passing through the valley. There may be other archeological and ethnographic information that identifies additionally culturally affiliated tribes. An ethnography focusing on Native American occupation and their relationship to the valley is needed.

## Description of Recommended Project or Activity

An Ethnographic Overview and Assessment would be conducted with the descendents of tribes who may be culturally affiliated with the Buffalo River Valley. These tribes presently have lands in Oklahoma. At the same time an Ethnographic Overview and Assessment would be conducted with historic Native Americans whose relatives passed thru the valley during the forced migration called the Trail of Tears. The tribes that were part of the migration consist of three Shawnee tribes, two Cherokee tribes, the Chickasaw, and the Choctaw. These tribes have lands in Oklahoma and Missouri. Many placenames are Native American or derive from Native American translations. Many local families claim Native heritage, but no one has conducted the research to bring all this scattered information together.

## BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00

Last Update: 02/13/98  
Initial Proposal: 1998

Project Statement

BUFF-C-410.001  
Priority: 2  
Page Num: 0087

-----UNFUNDED-----

	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	75.00	0.20
		Total:	75.00	0.20

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : NHPA ((106) NAT. HIST. PRES.)  
OTHER ()

Explanation: NAGPRA

Last Update: 02/12/98  
Initial Proposal: 1996

# Project Statement

BUFF-C-411.001  
Priority: 999  
Page Num: 0088

Title : NAGPRA CONSULTATIONS  
Sub-title:

Funding Status: Funded: 5.00 Unfunded: 19.00

Servicewide Issues : N24 (OTHER (NATURAL))  
Cultural Resource Type: ETHN (Ethnographic Resources)  
N-RMAP Program codes : S00 (Science Consultation and Oversight)

10-238 Package Number :

## Problem Statement

Native American Graves Protection and Repatriation Act requires consultation with the Native American populations who have or claim cultural affiliation to the land encompassing the BNR. Consultation could require the offsite visit of the BNR archeologist or accommodating the Native groups as they visit the museum collections of the BNR. There will be continuous consultation with the affiliated group because of erosion and inadvertent discoveries of native remains. There are ten tribal affiliates that have been in written communication with the Park and the next step is face-to-face consultations.

## Description of Recommended Project or Activity

There are three possibilities: one is to bring the interested groups to BNR to view and discuss the final disposition of the material followed by the repatriation process; two, would have the Park archeologist visit with the interested groups at a neutral site followed by a visit to the Park collection and final disposition; or a variation of the two.

## BUDGET AND FTEs:

Source		Activity	FUNDING	Budget (\$1000s)	FTEs
			Fund Type		
1997:	PKBASE-CR MIT		Recurring	5.00	0.10
Total:				5.00	0.10

Last Update: 02/12/98  
Initial Proposal: 1996

Project Statement

BUFF-C-411.001  
Priority: 999  
Page Num: 0089

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	ADM	One-time	7.00	0.20
Year 2:	ADM	One-time	4.00	0.10
Year 3:	ADM	One-time	4.00	0.10
Year 4:	ADM	One-time	4.00	0.10
Total:			=====	
			19.00	0.50

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : OTHER ()

Explanation: NAGPRA

Last Update: 02/05/98  
Initial Proposal: 1996

# Project Statement

BUFF-C-411.002  
Priority: 999  
Page Num: 0090

Title : NAGPRA REPATRIATION  
Sub-title:

Funding Status: Funded: 0.00 Unfunded: 20.00

Servicewide Issues : C25 (CULT. AFFIL)  
Cultural Resource Type: ETHN (Ethnographic Resources)  
N-RMAP Program codes : S00 (Science Consultation and Oversight)

10-238 Package Number :

## Problem Statement

NAGPRA requires repatriation of any claimed Native American human remains and associated funerary objects by a federally recognized tribal affiliate. The material needs to be identified and possibly analyzed before final disposition. There is not a bioarcheologist, ceramics specialist, pollen specialist, or facilities to allow dating analysis of organic matter, therefore requiring outside consultation.

## Description of Recommended Project or Activity

Action would require consultation for identification of human remains to comply with NAGPRA. The specialist would be an outside source that is familiar with regional variation between the prehistoric plains Indians and the bayou culture to the southeast, and the Archaic features found in the prehistoric human populations. Other specialists would be consulted for specific associated burial items and for dating any reburied material.

### BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00
		-----UNFUNDED-----		
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MIT	One-time	5.00	0.10
Year 2:	MIT	One-time	5.00	0.10
Year 3:	MIT	One-time	5.00	0.10

Last Update: 02/05/98  
Initial Proposal: 1996

Project Statement

BUFF-C-411.002  
Priority: 999  
Page Num: 0091

Year 4:	MIT	One-time	5.00	0.10
Total:			20.00	0.40

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : OTHER ()

Explanation: NAGPRA

Last Update: 02/13/98  
Initial Proposal: 1998

# Project Statement

BUFF-C-411.003  
Priority: 6  
Page Num: 0092

Title : CULTURAL AFFILIATIONS STUDIES  
Sub-title:

Funding Status: Funded: 0.00 Unfunded: 50.00

Servicewide Issues : C25 (CULT. AFFIL)  
Cultural Resource Type: COMB (Combination)  
N-RMAP Program codes :

10-238 Package Number :

## Problem Statement

Buffalo National River consults with ten tribal affiliates yet we do not have a researched and documented affiliation study for the park. There is historic documents stating the Osage travelled into the region to hunt during the first contact period in the 1560s. We have archeological evidence that suggests Caddo and Quapaw material influences. We also have one route of the Trail of Tears passing through the Buffalo River valley. This is just the tip of the "unofficial documentation" that covers Native American impacts on the valley. We need amore comprehensive and well researched affiliation study that covers prehistoric and historic occupations and relationships.

## Description of Recommended Project or Activity

A professional ethnographer would be hired to research and document the ten tribal affiliates already established for NAGPRA consultations.

### BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00
		-----UNFUNDED-----		
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	50.00	0.10
			=====	
Total:			50.00	0.10

Last Update: 02/13/98  
Initial Proposal: 1998

Project Statement

BUFF-C-411.003  
Priority: 6  
Page Num: 0093

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : NHPA ((106) NAT. HIST. PRES.)  
OTHER ()

Explanation: NAGPRA



Last Update: 02/13/98  
Initial Proposal: 1998

Project Statement

BUFF-C-411.004  
Priority: 8  
Page Num: 0094

Title : CONSULTATION WITH THE CHEROKEE AND KEETOWAH CHEROKE  
Sub-title:

Funding Status: Funded: 0.00 Unfunded: 30.00

Servicewide Issues : C30 (CONSULTATN)  
Cultural Resource Type: COMB (Combination)  
N-RMAP Program codes :

10-238 Package Number :

Problem Statement

In June 1999 the Arkansas Archeological Society along with the Buffalo National River will be conducting a Archeological Training Program that will excavate a historic Native American village. The village was inhabited between 1817 and 1826 during the Trail of Tears migration across Arkansas. The park would like to consult with the Cherokee tribes before the training begins as well as have tribal members on hand during the excavation. The Native American consultation is vital for the understanding, appreciation, and guidance before and during the training sessions.

Description of Recommended Project or Activity

Face to face consultation would be conducted before June 1999 so that the excavation project reflects any issues and concerns from the Native Americans, whose past we would excavating. We would pay their per diem and travel expenses from Oklahoma to Buffalo Point. During the excavation we would have the Native Americans assist in the identification and interpretation of the archeological material recovered.

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	20.00	0.20
Year 2:	RES	One-time	10.00	0.10

Last Update: 02/13/98  
Initial Proposal: 1998

Project Statement

BUFF-C-411.004  
Priority: 8  
Page Num: 0095

Total: =====  
30.00 0.30

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : ARPA (ARCH. RES. PROT. ACT.)  
NHPA ((106) NAT. HIST. PRES.)

Explanation: NAGPRA

	Project Statement	BUFF-C-422.000
Last Update: 02/17/98		Priority: 999
Initial Proposal: 1994		Page Num: 0096

Title : DEVELOP ETHNOGRAPHIC DATABASE

Funding Status: Funded: 0.00 Unfunded: 8.00

Servicewide Issues : C26 (ETHNOHIST)  
C28 (ERI)  
Cultural Resource Type: ETHN (Ethnographic Resources)  
N-RMAP Program codes :  
10-238 Package Number :

#### Problem Statement

The Ozark mountain culture represents distinctive lifestyles and attitudes which have continued to the present day in the Buffalo River area. Former residents, now physically removed by park acquisition, still retain the life views that living in the isolation of the Buffalo River afforded them. Within National River boundaries are ethnographic landscapes such as Boxley Valley. The varied and separate pieces of information which has been collected to date (oral histories, research notes, photographs) need to be compiled into a subject matter system which can be entered on a database system. As part of the ethnographic monies made available in 1991 for transcript typing, a prototype index was explored for a set of twenty-two Boxley Valley oral history interviews. However, there has not been staff or funding to take this index beyond its initial subject matter listing, or to enter it on a database system for further application and expansion. A database would also facilitate the direction and depth that any further ethnographic research should go.

#### Description of Recommended Project or Activity

Continue development of a database system for recording ethnographic information found in research materials to date. The 1991 Boxley Valley index should serve as a preliminary model.

#### BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00

	Project Statement	BUFF-C-422.000
Last Update: 02/17/98		Priority: 999
Initial Proposal: 1994		Page Num: 0097

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	2.00	0.10
Year 2:	RES	One-time	2.00	0.10
Year 3:	RES	One-time	2.00	0.10
Year 4:	RES	One-time	2.00	0.10
			=====	
		Total:	8.00	0.40

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes :

Explanation:

	Project Statement	BUFF-C-440.000
Last Update: 03/22/96		Priority: 999
Initial Proposal: 1994		Page Num: 0098

Title : CONTINUE ORAL HISTORY PROGRAM

Funding Status: Funded: 4.20 Unfunded: 8.00

Servicewide Issues : C38 (SPEC STUDY)  
C27 (ORAL HIST)  
Cultural Resource Type: ETHN (Ethnographic Resources)  
N-RMAP Program codes :  
10-238 Package Number :

### Problem Statement

An oral history program was begun in 1973 and has continued to the present. Interviews have been recorded with pioneer Buffalo River settlers, figures significant in the establishment of the park, persons with specific historic resource knowledge, and persons with knowledge of traditional Ozark lifeways. As the list of contacts who remember when log homes were common and fields were plowed by mule gets less, it becomes even more important to reach these last of the first-hand viewers of many events of Buffalo River history. With the knowledge gained to date from these interviews, it would also be useful to initiate new interviews with former informants in order to record more detailed information on places and events for which they are knowledgeable.

### Description of Recommended Project or Activity

The oral history program needs to remain an important research tool at Buffalo National River. Funding and staff time should be set aside to seek out informants and record interviews and add this material to the National River's valuable oral history collection.

### BUDGET AND FTEs:

		FUNDED		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1994:	PKBASE-CR RES	One-time	1.00	0.10
	VOL-IN-PK RES	One-time	0.10	0.10
Subtotal:			1.10	0.20

Last Update: 03/22/96 Initial Proposal: 1994	Project Statement	BUFF-C-440.000 Priority: 999 Page Num: 0099
---	-------------------	---

1995: PKBASE-CR RES VOL-IN-PK RES	One-time One-time	1.00 0.10	0.10 0.10
	Subtotal:	----- 1.10	----- 0.20
1996: PKBASE-CR RES	One-time	1.00	0.10
1997: PKBASE-CR RES	One-time	1.00	0.10
	Total:	=====	=====
		4.20	0.60

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	2.00	0.10
Year 2:	RES	One-time	2.00	0.10
Year 3:	RES	One-time	2.00	0.10
Year 4:	RES	One-time	2.00	0.10
		Total:	=====	=====
			8.00	0.40

(Optional) Alternative Actions/Solutions and Impacts  
 (No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B

	Project Statement	BUFF-C-445.000
Last Update: 02/17/98		Priority: 999
Initial Proposal: 1994		Page Num: 0100

Title : TRANSCRIBE ORAL HISTORY TAPES

Funding Status: Funded: 4.50 Unfunded: 11.00

Servicewide Issues : C27 (ORAL HIST)  
 Cultural Resource Type: ETHN (Ethnographic Resources)  
 N-RMAP Program codes :

10-238 Package Number :

#### Problem Statement

Buffalo National River has had an ongoing oral history program since its establishment. At present over 150 taped interviews are on file. These interviews, many with Buffalo River pioneers who are no longer living, contain important research and interpretive information. The informants of these interviews represent the last generation of Buffalo River residents and the last link to traditional Buffalo River lifestyles. Because very limited documentation was kept with the early oral history interviews, accurate transcripts are essential for use of this valuable resource. Ethnographic monies have provided for transcripts of 20 tapes. About 75 more tapes need transcription. Transcripts will then be available for park research and interpretation.

#### Description of Recommended Project or Activity

Prioritize the remaining transcripts by significance of the interview. Contract for transcript typing as funding allows, utilizing the present system of transcript review by the historian. Provide tape logs for current interviews until transcripts can be completed. Fund clerical assistance for cultural resources so all new interviews can be transcribed for immediate review by the interviewer.

#### BUDGET AND FTEs:

		-----FUNDED-----		
	Source	Activity	Fund Type	Budget (\$1000s) FTEs
1994:	SVC-OTHER MIT		One-time	4.50 0.20
				=====
		Total:		4.50 0.20

	Project Statement	BUFF-C-445.000
Last Update: 02/17/98		Priority: 999
Initial Proposal: 1994		Page Num: 0101

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MIT	One-time	5.00	0.10
Year 2:	MIT	One-time	2.00	0.10
Year 3:	MIT	One-time	2.00	0.10
Year 4:	MIT	One-time	2.00	0.10
			=====	
	Total:		11.00	0.40

(Optional) Alternative Actions/Solutions and Impacts

Failure to complete the transcriptions will make it difficult to use the oral history collection and will result in a loss of valuable information for management documents.

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)



	Project Statement	BUFF-C-450.000
Last Update: 02/12/98		Priority: 999
Initial Proposal: 1994		Page Num: 0102

Title : CONTINUE VIDEO HISTORY PROJECT

Funding Status: Funded: 1.80 Unfunded: 6.00

Servicewide Issues : C38 (SPEC STUDY)  
C27 (ORAL HIST)  
Cultural Resource Type: ETHN (Ethnographic Resources)  
N-RMAP Program codes :

10-238 Package Number :

### Problem Statement

Beginning in 1990 the video camera was used to conduct oral histories where audio would not be sufficient to show the importance of the informant or the subject matter. Former NPS director George Hartzog was the first subject of this format. Five other video histories have been conducted, including the start of a series on traditional farm industries and interviews on site with individuals having first hand knowledge of historic sites within the park. However, there has not been time or staff to continue this program in any kind of organized research manner. In the meantime, valuable informants who can demonstrate traditional crafts or skills, or who have first hand knowledge of park historic sites, are passing from the scene. Park staff has explored working with two local historical societies who have expressed an interest in this kind of documentation. Assistance through the volunteer in park program has also been requested. Training in professional skills in video interviews would enhance the quality of the program.

### Description of Recommended Project or Activity

Continue to encourage concept of video histories. Utilize any local resources to accomplish this goal. Prepare a priority plan of subject matter and informants. Provide professional training in video techniques and interview strategies.

### BUDGET AND FTEs:

		-----FUNDED-----		
	Source	Activity	Fund Type	Budget (\$1000s) FTEs
1994:	VOL-IN-PK RES		Recurring	0.10 0.20
	PKBASE-CR RES		Recurring	0.50 0.10
			-----	-----
		Subtotal:		0.60 0.30

Last Update: 02/12/98  
Initial Proposal: 1994

# Project Statement

BUFF-C-450.000  
Priority: 999  
Page Num: 0103

1995:	VOL-IN-PK RES	Recurring	0.10	0.20
	PKBASE-CR RES	Recurring	0.50	0.10
		Subtotal:	0.60	0.30
1996:	VOL-IN-PK RES	Recurring	0.10	0.20
	PKBASE-CR RES	Recurring	0.50	0.10
		Subtotal:	0.60	0.30
		Total:	1.80	0.90

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	4.00	0.10
Year 2:	RES	One-time	2.00	0.10
		Total:	6.00	0.20

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

	Project Statement	BUFF-C-470.000
Last Update: 02/12/98		Priority: 28
Initial Proposal: 1994		Page Num: 0104

Title : DEVELOP PARK ARCHIVES

Funding Status: Funded: 3.70 Unfunded: 8.00

Servicewide Issues : C41 (CMP)  
C91 (ARCHIVES)  
Cultural Resource Type: OBJC (Object)  
N-RMAP Program codes :

10-238 Package Number : 158

#### Problem Statement

At present park documentation is divided among several depositories, including the park museum, the park library, the historian's files, land acquisition records, and central park files, as well as with individual staff. In many instances, locating information is dependent on the personal knowledge of long time staff members. A separate, controlled access park archives is needed to professionally store materials related to park history and development, as well as archive research files. The nucleus of a park archives has been established in the historian's office. Material is organized and archived as time allows. Archival storage units are needed for maps, books, oral history tapes, photographs, and document boxes.

#### Description of Recommended Project or Activity

Establish one park archives area and prepare a collections plan. The park historian should serve as the administrator of the archives. This would allow for the integration of documentary material, historical research files such as photographs and maps, and copies of all planning documents and contract studies in one location for restricted access, but still available for research.

#### BUDGET AND FTEs:

		-----FUNDED-----			
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1994:	PKBASE-CR MIT		Recurring	1.00	0.10
1995:	PKBASE-CR MIT		Recurring	0.50	0.10
	TEMP\$-CR RES		One-time	1.20	0.10
				-----	
Subtotal:				1.70	0.20

Last Update: 02/12/98 Initial Proposal: 1994	Project Statement	BUFF-C-470.000 Priority: 28 Page Num: 0105
---	-------------------	--

1996:	PKBASE-CR MIT	Recurring	0.50	0.10
1997:	PKBASE-CR MIT	Recurring	0.50	0.10

	Total:	=====	3.70	0.50
--	--------	-------	------	------

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MIT	Cyclic	5.00	0.20
Year 2:	MIT	Cyclic	1.00	0.10
Year 3:	MIT	Cyclic	1.00	0.10
Year 4:	MIT	Cyclic	1.00	0.10
		Total:	=====	0.50
			8.00	

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

Project Statement  
Last Update: 02/17/98  
Initial Proposal: 1994

BUFF-C-472.000  
Priority: 999  
Page Num: 0106

Title : ARCHIVE ORAL HISTORIES

Funding Status: Funded: 5.50 Unfunded: 14.00

Servicewide Issues : C47 (STORAGE)  
Cultural Resource Type: OBJC (Object)  
N-RMAP Program codes :

10-238 Package Number : 158

#### Problem Statement

The 150 audio and video histories in the park collection exist in a variety of forms. Tapes include reel-to-reel, cassette, and dictaphone. Many of the tapes are originals without listening copies. Tapes previous to 1984 have very little accompanying documentation. In 1983 the existing tapes were inventoried and placed in metal storage cabinets. The current collection has outgrown that storage space. The tapes were reinventoried in 1993 and a database inventory developed for the collection. Original tapes still need to be copied for research use to a standard format, while the originals should be archived for safekeeping. A documentation file has been developed for each interview, but for many older interviews all interview data is missing and will need to be reconstructed. For older tapes no machinery is locally available for playing or copying tapes.

#### Description of Recommended Project or Activity

Provide for additional storage facilities meeting archival standards. Copy all original tapes onto a standardized format so that tapes are available for research. Complete documentation folders for all interviews, including background information on the informants. Continue this procedure for all future interviews. Keep database inventory current, with access for research and interpretation needs. Related project is C-445.

#### BUDGET AND FTEs:

		-----FUNDED-----			
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1994:	PKBASE-CR	PRO	Recurring	2.00	0.10
1995:	PKBASE-CR	MIT	Recurring	1.00	0.10

Last Update: 02/17/98  
Initial Proposal: 1994

# Project Statement

BUFF-C-472.000  
Priority: 999  
Page Num: 0107

1996:	PKBASE-CR MIT	Recurring	1.00	0.10
	VOL-IN-PK MIT	Recurring	0.50	0.10
		-----		
		Subtotal:	1.50	0.20
1997:	PKBASE-CR MIT	Recurring	1.00	0.10
		=====		
		Total:	5.50	0.50

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MIT	Recurring	1.00	0.05
	MIT	One-time	4.00	0.20
		-----		
		Subtotal:	5.00	0.25
Year 2:	MIT	One-time	2.00	0.10
	MIT	Recurring	1.00	0.05
		-----		
		Subtotal:	3.00	0.15
Year 3:	MIT	One-time	2.00	0.10
	MIT	Recurring	1.00	0.05
		-----		
		Subtotal:	3.00	0.15
Year 4:	MIT	One-time	2.00	0.10
	MIT	Recurring	1.00	0.05
		-----		
		Subtotal:	3.00	0.15
		=====		
		Total:	14.00	0.70

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(2)

	Project Statement	BUFF-C-500.001
Last Update: 02/12/98		Priority: 999
Initial Proposal: 1994		Page Num: 0108

Title : DOCUMENT MUSEUM COLLECTION  
 Sub-title: CYCLIC CATALOGING

Funding Status: Funded: 10.00 Unfunded: 40.00

Servicewide Issues : C46 (ACCOUNTBLY)  
 Cultural Resource Type: OBJC (Object)  
 N-RMAP Program codes :

10-238 Package Number :

#### Problem Statement

The park continues to receive museum objects from various sources each year. With each donation, loan, purchase, transfer or exchange, documents need to be created which transfer legal title to the National Park Service. The objects, once accessioned, need to be cataloged to document their appearance, history and condition. Much of the existing collection documentation is incomplete and needs to be reviewed to determine the extent of work necessary to bring the collection documentation up to NPS standards.

Park base funds are not available to provide for a recurring seasonal position to address the cataloging and documentation needs.

#### Description of Recommended Project or Activity

Provide for support of the accession and cataloging activity. A seasonal GS-5 position of four months each year, would allow for the collections to receive proper attention until a permanent GS-7/9 Museum Specialist can be funded.

#### BUDGET AND FTEs:

-----FUND-----		-----FUND-----	
Source	Activity	Fund Type	Budget (\$1000s) FTEs
1997: PKBASE-OT MIT		Recurring	10.00 0.20
		=====	
Total:			10.00 0.20

Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-500.001  
Priority: 999  
Page Num: 0109

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MIT	Recurring	10.00	0.40
Year 2:	MIT	Recurring	10.00	0.40
Year 3:	MIT	Recurring	10.00	0.40
Year 4:	MIT	Recurring	10.00	0.40
Total:			===== 40.00	===== 1.60

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6



Last Update: 03/25/96  
Initial Proposal: 1994

# Project Statement

BUFF-C-500.002  
Priority: 999  
Page Num: 0110

Title : DOCUMENT MUSEUM COLLECTION  
Sub-title: PHOTOGRAPH MUSEUM OBJECTS

Funding Status: Funded: 0.00 Unfunded: 16.00

Servicewide Issues : C46 (ACCOUNTBLY)  
C28 (ERI)

Cultural Resource Type: OBJC (Object)

N-RMAP Program codes :

10-238 Package Number :

## Problem Statement

The majority of museum objects at Buffalo NR lack photographic and video documentation to supplement the catalog record. Visual documentation is needed to aid in the description of complex objects, record object condition, and aid law enforcement personnel in their recovery if lost or stolen. They also help preserve the objects by providing research access without the need to handle or remove the object from its controlled environment.

## Description of Recommended Project or Activity

Visually document the objects in the Buffalo NR collection on a cyclic schedule. It is more efficient to document objects by size and type. Once documentation equipment is set up, staff can photograph or video tape large numbers of objects at one time.

### BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MON	Cyclic	10.00	0.40
Year 2:	MON	Cyclic	2.00	0.10
Year 3:	MON	Cyclic	2.00	0.10
Year 4:	MON	Cyclic	2.00	0.10

Last Update: 03/25/96  
Initial Proposal: 1994

Project Statement

BUFF-C-500.002  
Priority: 999  
Page Num: 0111

	=====	
Total:	16.00	0.70

(Optional) Alternative Actions/Solutions and Impacts

Failure to document objects would result in lack of baseline condition information, lack of documentation for law enforcement actions, and the necessity to handle the objects more often for research and accountability.

Objects could be photographed singly as they are cataloged. This would result in an inefficient use of staff time in setting up equipment, loading and reloading film, and photographing objects of varied size and type. Space constraints preclude leaving equipment set up for long periods of time.

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

Last Update: 03/25/96  
Initial Proposal: 1994

# Project Statement

BUFF-C-500.003  
Priority: 999  
Page Num: 0112

Title : DOCUMENT MUSEUM COLLECTION  
Sub-title: CONVERT RECORDS TO ANCS

Funding Status: Funded: 0.00 Unfunded: 20.00

Servicewide Issues : C46 (ACCOUNTBLY)  
Cultural Resource Type: OBJC (Object)  
N-RMAP Program codes :

10-238 Package Number :

## Problem Statement

The museum catalog records number approximately 30,000+. The park has automated its cataloging of museum objects under the Automated National Catalog System. The maintenance of both a manual and computerized system is inefficient in that dual procedures, dual searches, and dual files must be dealt with for every management action taken.

These records cannot simply be entered or converted verbatim. The NPS classification system has been changed since the records were created, necessitating a more lengthy conversion. In addition, the records vary considerably in the quality of their content. For the most part, worksheets will need to be completed and accession documents searched to find missing information. Descriptive blocks need to be standarized to facilitate ease of computer searching data. This will bring our catalog and ANCS records up to NPS standards.

## Description of Recommended Project or Activity

Hire seasonal Museum Technician to review the manual records, verify the accuracy and completeness of the records by viewing the objects, take measurements where needed, and convert classifications as appropriate. Enter the records not previously entered and print new cards as necessary.

### BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00

Last Update: 03/25/96  
Initial Proposal: 1994

Project Statement

BUFF-C-500.003  
Priority: 999  
Page Num: 0113

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	Cyclic	5.00	0.10
Year 2:	RES	Cyclic	5.00	0.10
Year 3:	RES	Cyclic	5.00	0.10
Year 4:	RES	Cyclic	5.00	0.10
Total:			=====	=====
			20.00	0.40

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

	Project Statement	BUFF-C-500.004
Last Update: 02/05/98		Priority: 14
Initial Proposal: 1996		Page Num: 0114

Title : SITE FILES TRANSFERRED TO ASMIS DATABASE  
 Sub-title:

Funding Status: Funded: 0.00 Unfunded: 22.00

Servicewide Issues : C02 (ID & EVAL)  
 Cultural Resource Type: CULL (Cultural Landscape)  
 N-RMAP Program codes : C00 (Collections and Data Management)

10-238 Package Number :

#### Problem Statement

The site records are presently only a paper copy. A database will allow for manipulation of the data for illustrations, diagrams, and distribution maps. Access to this form of research will encourage better relationships between the public and private sectors. These data will allow the archeological record to be used much the same way as ANCS allows the museum collection to be analyzed and queried. This project is identified as GPRA goal 1b4, Archeology Sites on a Database.

#### Description of Recommended Project or Activity

Presently the existing archeological site files are stored in paper copy only. The files will be entered into the Archeology Sites Management Information System. Broad and direct questions will be addressed creating relationships, anomalies, and more complex avenues of research. Only from queries will we broaden and deepen our understanding of the prehistoric and historic cultures. We have over 500 sites along the Buffalo with the number increasing every month. We need to hire a seasonal employee who will input the data and design queries for the future analysis of the archeological distribution, site density, population studies, environmental relationships, and other avenues of research.

#### BUDGET AND FTEs:

-----FUNDING-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00

Last Update: 02/05/98  
Initial Proposal: 1996

Project Statement

BUFF-C-500.004  
Priority: 14  
Page Num: 0115

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	ADM	One-time	10.00	0.20
Year 2:	ADM	Cyclic	4.00	0.10
Year 3:	ADM	Cyclic	4.00	0.10
Year 4:	ADM	Cyclic	4.00	0.10
			=====	
Total:			22.00	0.50

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes :

Explanation:

Last Update: 02/12/98  
Initial Proposal: 1998

# Project Statement

BUFF-C-500.005  
Priority: 16  
Page Num: 0116

Title : BACKLOG CATALOGGING FOR HERBARIUM  
Sub-title:

Funding Status: Funded: 0.00 Unfunded: 6.00

Servicewide Issues : C46 (ACCOUNTBLY)  
Cultural Resource Type: OBJC (Object)  
N-RMAP Program codes :

10-238 Package Number :

## Problem Statement

While conducting the annual Automated Inventory Program we discovered over 8600 cataloged items that were assigned numbers but not entered into the Automated National Catalog System. The items were all part of herbarium collections made between 1974 and 1985. We have the blue working copies but no ANCS data.

## Description of Recommended Project or Activity

We need to hire a seasonal employee who would enter the data from the workign copies into the ANCS coputer. These catalogs would then be submitted as recataloged items because of the increased information needed in the current ANCS. The employee would finish the job in two months time.

### BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	6.00	0.20
Total:			6.00	0.20

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Last Update: 02/12/98  
Initial Proposal: 1998

# Project Statement

BUFF-C-500.005  
Priority: 16  
Page Num: 0117

Compliance codes :

Explanation:



Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-501.001  
Priority: 999  
Page Num: 0118

Title : MAINTAIN MUSEUM COLLECTION  
Sub-title: PREPARE AN EMERG. OP. PLA

Funding Status: Funded: 0.00 Unfunded: 5.00

Servicewide Issues : C50 (SECTY&FIRE)  
Cultural Resource Type: OBJC (Object)  
N-RMAP Program codes :

10-238 Package Number :

Problem Statement

An Emergency Operations Plan is needed to establish the procedures to follow in the event of a disaster or civil disturbance that impacts the collections of Buffalo National River. Park collections will be stored in the newly constructed Bally building. In the event of a tornado, the possibility of which is fairly common, park collections in the Bally building and on exhibit at the Tyler Bend Visitor Center will receive the protection outlined in the plan. Other common disasters will be addressed such as fire and flooding. The deficiency was noted as a GPRA goal 1a6, Park Museum Collections.

Description of Recommended Project or Activity

Provide funding for consultant to prepare this document and to train appropriate personnel.

BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
		Total:	0.00	0.00
		-----UNFUNDED-----		
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	PRO	One-time	5.00	0.20
			=====	=====
		Total:	5.00	0.20

Project Statement  
Last Update: 02/12/98  
Initial Proposal: 1994

BUFF-C-501.001  
Priority: 999  
Page Num: 0119

(Optional) Alternative Actions/Solutions and Impacts

This plan could be postponed, however, the use of the new Bally building began without a proactive plan to provide for the safety of the park collections.

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6



Project Statement  
Last Update: 02/05/98  
Initial Proposal: 1994

BUFF-C-501.002  
Priority: 999  
Page Num: 0120

Title : MAINTAIN MUSEUM COLLECTION  
Sub-title: PREPARE IPM FOR STORAGE

Funding Status: Funded: 0.00 Unfunded: 5.00

Servicewide Issues : C49 (ENVIRONMNT)  
Cultural Resource Type: COMB (Combination)  
N-RMAP Program codes :

10-238 Package Number :

### Problem Statement

An Integrated Pest Management Plan is required for all NPS museums as specified in the NPS Museum Handbook, Part II, and in Special Directive 80-1. This plan will provide needed guidance in protecting museum objects, in storage and on exhibit, from damage caused by pests. Since this protection often involves the use of pesticides and other chemicals, the guidance provided by this plan will be essential to meeting the park's obligations to museum management and environmental protection, as well as employee safety. We have already lost several exhibit items due to insect infestation. this project is identified as GPRA goal 1a6, Museum Collections and NPS Curatorial Standards.

### Description of Recommended Project or Activity

The Integrated Pest Management Plan for the park's museum will be prepared by professionals in the field of pest management, with the cooperation and coordination of the Division of Resources Management, the Division of Interpretation, and the Division of Maintenance. This plan will meet current standards for integrated Pest Management Plans.

### BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
		Total:	0.00	0.00
		-----UNFUNDED-----		
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	PRO	One-time	5.00	0.10

Last Update: 02/05/98  
Initial Proposal: 1994

Project Statement

BUFF-C-501.002  
Priority: 999  
Page Num: 0121

	=====	
Total:	5.00	0.10

(Optional) Alternative Actions/Solutions and Impacts

If the park does not have an Integrated Pest Management Plan for the park collections storage and exhibit areas, the standards set forth in the Museum Handbook, Part II and Special Directive 80-1 will not be met. Should the park's museum storage area or exhibit areas experience pest infestations, it may be difficult to deal with the situation without an approved IPM.

Compliance codes : OTHER ( )

Explanation: SPECIAL DIRECTIVE 80-1

Project Statement  
Last Update: 02/12/98  
Initial Proposal: 1994

BUFF-C-501.003  
Priority: 999  
Page Num: 0122

Title : MAINTAIN MUSEUM COLLECTION  
Sub-title: CONSTRUCT MUSEUM STORAGE

Funding Status: Funded: 3.00 Unfunded: 75.00

Servicewide Issues : C47 (STORAGE)  
Cultural Resource Type: OBJC (Object)  
N-RMAP Program codes :

10-238 Package Number :

#### Problem Statement

The existing Bally Building is not adequate to meet the preservation and storage needs of the Parks' larger historic farm implements. Additional storage cabinets and properly constructed shelving are necessary to provide the protection set forth in Special Directive 80-1. Many objects in the collection are improperly stored in outlying facilities including the warehouse, the Pruitt Barn, in a field at Silver Hill, and in other historic buildings throughout the park. This project is identified as GPRA goal 1a6, Museum Collections and NPS Curatorial Standards.

#### Description of Recommended Project or Activity

In the first year purchase newly designed environmental storage, additional shelving, and proper museum storage cabinets for the Bally facility to meet storage standards for the present collection and allowing for some growth as identified in the Collections Storage Plan. Construct custom racks for storage of large farm implements. Construct additional storage space for the large farm implements that can not rest on standard shelving, implements such as; hay bailer, horse drawn wagons, horse drawn riding plow, etc. The second year will provide temporary personnel for the moving of the farm implements, and their stabilization in the new facility.

#### BUDGET AND FTEs:

Source		Activity	FUND Type	Budget (\$1000s)	FTEs
1997:	RG-CR-MTN	PRO	One-time	3.00	0.10
Total:				3.00	0.10

Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-501.003  
Priority: 999  
Page Num: 0123

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	PRO	One-time	65.00	1.10
Year 2:	PRO	One-time	10.00	0.20
Total:			=====	
			75.00	1.30

(Optional) Alternative Actions/Solutions and Impacts

Delaying the move into the facility would mean that the collection would not meet the standards set forth in Special Directive 80-1 and that the collections would not be brought together and receive the protection they need. New accessions would be limited by storage space and our ability to care for them.

Compliance codes : OTHER ()  
NHPA ((106) NAT. HIST. PRES.)

Explanation: SPECIAL DIRECTIVE 80-1

----

Last Update: 02/05/98  
Initial Proposal: 1994

# Project Statement

BUFF-C-501.004  
Priority: 999  
Page Num: 0124

Title : MAINTAIN MUSEUM COLLECTION  
Sub-title: DEVELOP SECURITY & FIRE

Funding Status: Funded: 0.00 Unfunded: 40.00

Servicewide Issues : C50 (SECTY&FIRE)  
Cultural Resource Type: OBJC (Object)  
N-RMAP Program codes :

10-238 Package Number :

## Problem Statement

The museum collection at Buffalo NR contains hundreds of thousands of items of archeological and historical research and interpretive value. A locked door and museum cabinets are the only security the collection has in the Bally building at present. No intrusion alarm system or fire control measures exist in the Bally building. Fire and security systems are located at the Tyler Bend Visitor Center where some museum objects are on display. This project is identified as GPRA goal 1a6, Museum Collections and NPS Curatorial Standards.

## Description of Recommended Project or Activity

Research, plan, and provide for appropriate security for museum objects in both storage and exhibit areas. The security needs to include intrusion alarm and prevention measures, lighting, and fire detection and suppression systems. After the equipment is installed it needs to be maintained, monitored and repaired as needed.

### BUDGET AND FTEs:

Source		Activity	Fund Type	Budget (\$1000s)	FTEs
			Total:	0.00	0.00
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	PRO	One-time		30.00	0.20
Year 2:	PRO	One-time		10.00	0.20



Last Update: 02/05/98  
Initial Proposal: 1994

Project Statement

BUFF-C-501.004  
Priority: 999  
Page Num: 0125

	=====	
Total:	40.00	0.40

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B

Last Update: 02/12/98  
Initial Proposal: 1994

# Project Statement

BUFF-C-501.005  
Priority: 0  
Page Num: 0126

Title : MAINTAIN MUSEUM COLLECTION  
Sub-title: MAINTAIN COLLECTION ENVIR

Funding Status: Funded: 15.00 Unfunded: 0.00

Servicewide Issues : C49 (ENVIRONMNT)  
Cultural Resource Type: OBJC (Object)  
N-RMAP Program codes :

10-238 Package Number :

## Problem Statement

The new Bally building does not have any environmental monitoring equipment at present. A new HVAC system will be installed but must be tested to know how it will control the storage environment. The collection must be maintained at a constant temperature and relative humidity. This will be accomplished through the maintenance of an HVAC system in operation 24 hours a day. Additional equipment such as humidifiers or space heaters and hygrothermographs or datalogger will be necessary. This system needs to be maintained on a regular schedule. Components of the system need to be repaired, replaced or updated on a cyclic basis.

## Description of Recommended Project or Activity

Purchase needed equipment including hygrothemograph, hygrometers, datalogger, humidifier and heaters. Establish a schedule to monitor the environment in the Bally building. Use information gained to better protect the museum collection.

## BUDGET AND FTEs:

Source		Activity	FUND Type	Budget (\$1000s)	FTEs
1994:	PKBASE-OT	MON	Cyclic	6.00	0.00
1995:	RG-CR-MTN	MON	Cyclic	3.00	0.00
1996:	PKBASE-OT	MON	Cyclic	3.00	0.00
1997:	PKBASE-OT	MON	Recurring	3.00	0.10
Total:				15.00	0.10

Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-501.005  
Priority: 0  
Page Num: 0127

-----UNFUNDED-----  
Activity Fund Type Budget (\$1000s) FTEs  
=====

Total:		0.00	0.00
--------	--	------	------

(Optional) Alternative Actions/Solutions and Impacts

Without this information the collections are not protected as they should be and are susceptible to further deterioration.

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

Last Update: 02/05/98  
Initial Proposal: 1994

Project Statement

BUFF-C-502.001  
Priority: 999  
Page Num: 0128

Title : PRESERVE MUSEUM COLLECTION  
Sub-title: SURVEY OBJECT CONDITION

Funding Status: Funded: 0.00 Unfunded: 8.00

Servicewide Issues : C43 (CONDIT SVY)  
Cultural Resource Type: OBJC (Object)  
N-RMAP Program codes :

10-238 Package Number :

Problem Statement

Buffalo NR's museum objects pose special problems in their preservation and care due to the diversity in type, manufacture and composition. The farm pieces, in particular, are made of a variety of organic/inorganic materials that may adversely affect each other. The majority of these pieces have been exposed to the elements, insects, molds, and rust. All of the farm equipment and many other architectural pieces have not received conservation treatment and must be assessed to establish a plan for treatment. This project is identified as GPRA goal 1a6, Museum Collections and NPS Curatorial Standards.

Description of Recommended Project or Activity

A professional conservator will survey the collection and determine the conservation needs.

BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
		Total:	0.00	0.00
		-----UNFUNDED-----		
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MON	One-time	8.00	0.20
			=====	
		Total:	8.00	0.20

Last Update: 02/05/98  
Initial Proposal: 1994

Project Statement

BUFF-C-502.001  
Priority: 999  
Page Num: 0129

(Optional) Alternative Actions/Solutions and Impacts

If this survey is not completed the preservation of the outdoor objects will have to wait longer and become more deteriorated.

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

Last Update: 02/05/98  
Initial Proposal: 1994

# Project Statement

BUFF-C-502.002  
Priority: 999  
Page Num: 0130

Title : PRESERVE MUSEUM COLLECTION  
Sub-title: TREAT MUSEUM OBJECTS

Funding Status: Funded: 0.00 Unfunded: 35.00

Servicewide Issues : C43 (CONDIT SVY)  
C48 (TREATMENT)

Cultural Resource Type: OBJC (Object)

N-RMAP Program codes :

10-238 Package Number :

## Problem Statement

The park's museum collection includes many objects that need cyclic surveys to assess their condition and recommend storage and treatment tasks. These treatments then need to be carried out. Initial treatment should be carried out by a professional conservator with assistance from the BNR Curator. This project is identified as GPRA goal 1a6, Museum Collections and NPS Curatorial Standards.

## Description of Recommended Project or Activity

In consultation with the Regional Curator and Harpers Ferry Center conservators, develop priorities for the treatment of selected objects in the collection, identify treatment required, and arrange for treatment by qualified conservator. This work needs to be done on a cyclic basis, based on the results of the condition survey.

Objects may need to be prepared for shipping. All treatment must be documented on Object Treatment Reports and through documentary photographs all of which are to be maintained permanently in the park's museum records system.

## BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00

Last Update: 02/05/98  
Initial Proposal: 1994

Project Statement

BUFF-C-502.002  
Priority: 999  
Page Num: 0131

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MIT	One-time	25.00	0.30
Year 2:	MIT	Recurring	10.00	0.20
Total:			=====	=====
			35.00	0.50

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

Last Update: 02/12/98  
Initial Proposal: 1994

## Project Statement

BUFF-C-601.001  
Priority: 18  
Page Num: 0132

Title : INVENTORY/ASSESS PREHISTORIC ARCHEOLOGICAL RESOURCE  
Sub-title:

Funding Status: Funded: 5.00 Unfunded: 400.00

Servicewide Issues : C01 (OVERVIEW)  
Cultural Resource Type: SITE (Archeological Site)  
N-RMAP Program codes :

10-238 Package Number : 116

## Problem Statement

Buffalo National River is rich in archeological resources, including one archeological district and individual sites eligible for the National Register. Sites are so numerous along the river that it is virtually impossible to plan a development area without encompassing one or more sites. Prehistoric sites were recorded for years by interested amateurs. The need for a comprehensive survey has been recognized since establishment of the park in 1972, surveys and data recovery have been conducted in a non-systematic and ad hoc fashion, as dictated by the need for Section 106 clearance for funded construction projects and by the legal requirements for conveying land by sales and exchanges. These limited surveys have determined that a wider range of archeological site types exist, including both prehistoric and historic site areas. Information recovered from excavation sites has changed regional chronologies and contexts. A comprehensive survey is needed to identify location, density, cultural affiliation, within the park and to identify site significance and vulnerability for resource protection and monitoring. This project is identified in the Midwest Region's Systemwide Archeological Inventory Program Plan.

## Description of Recommended Project or Activity

A survey of all archeological resources of Buffalo National River should be planned, and all sites mapped and evaluated for additional testing as indicated by level of significance and potential for scientific data. Additionally, cultural affiliations need to be identified, and potential impacts noted. Significant sites need to be identified for resource monitoring and preservation. The present practice of surveying all planned development areas should continue and the data incorporated into the park planning process.

The park has been segmented into high, medium, and low potential zones concerning prehistoric archeological sites. The proposed inventory would begin in the high potential zones with surface



Last Update: 02/12/98  
Initial Proposal: 1994

Project Statement

BUFF-C-601.001  
Priority: 18  
Page Num: 0133

surveys. The surveys would continue through the other two zoned areas until the whole park was surveyed and all sites mapped using GIS/GPS technology. Once the sites were surface located, shovel testing would be conducted to determine site boundaries, period, and site significance. The shovel testing would continue from the high potential zones through to the low potential zones until all previously recorded sites were assessed.

BUDGET AND FTEs:

Source		Activity	FUND Type	Budget (\$1000s)	FTEs
1997:	PKBASE-OT	MON	Recurring	5.00	0.10
Total:				5.00	0.10

		Activity	FUND Type	Budget (\$1000s)	FTEs
Year 1:		RES	Recurring	160.00	4.00
Year 2:		RES	Recurring	80.00	3.00
Year 3:		RES	Recurring	80.00	3.00
Year 4:		RES	Recurring	80.00	3.00
Total:				400.00	13.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : NHPA ((106) NAT. HIST. PRES.)  
ARPA (ARCH. RES. PROT. ACT.)

Explanation: NAGPRA

	Project Statement	BUFF-C-601.002
Last Update: 02/12/98		Priority: 20
Initial Proposal: 1996		Page Num: 0134

Title : INVENTORY/ASSESS HISTORIC ARCHEOLOGICAL RESOURCES  
Sub-title:

Funding Status: Funded: 0.00 Unfunded: 100.00

Servicewide Issues : C01 (OVERVIEW)  
Cultural Resource Type: SITE (Archeological Site)  
N-RMAP Program codes : C00 (Collections and Data Management)

10-238 Package Number :

#### Problem Statement

The historic archaeologic record has been overlooked because of a lack of professional experience. The staff archeologist specialized in historic archeology. The discipline should be applied to the BNR. There is local knowledge of Civil War skirmishes and ambushes, but the extent of the actual sites is unknown. Through a systematic metal detection survey these sites as well as frontier expansion, pioneer settlement and trail of tears may be recorded and monitored for a better understanding of the hidden historic heritage. This project is identified in the Midwest Systemwide Archeological Inventory Program Plan.

#### Description of Recommended Project or Activity

The rich historic resources along the BNR have been known and recorded for many years. What has been overlooked are the subsurface historic resources. These resources vary from wells, outhouses, distilleries, trash middens, collapsed structures, to Civil War battle sites. Many of these sites have been untouched and unrecorded. Systematic metal detection surveys would be conducted at known historic sites to broaden and uncover the archeological record. Metal detection would then be extended to the lesser known and poorly documented sites. Once the site is identified an assessment can be made regarding significance, integrity, and preservation techniques. Metal detection has proven to increase historic features in area and complexity, thus adding enormous amounts of data to the material culture and understanding of the period and site. Once we have a more thorough understanding of the historic archeological record we can begin to monitor the natural and cultural impacts to the sites and adjust our preservation plans accordingly.

Last Update: 02/12/98  
Initial Proposal: 1996

Project Statement

BUFF-C-601.002  
Priority: 20  
Page Num: 0135

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	PRO	Recurring	25.00	0.30
Year 2:	PRO	Recurring	25.00	0.30
Year 3:	PRO	Recurring	25.00	0.30
Year 4:	PRO	Recurring	25.00	0.30
Total:			=====	=====
			100.00	1.20

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : ARPA (ARCH. RES. PROT. ACT.)  
NHPA ((106) NAT. HIST. PRES.)

Explanation:

Last Update: 02/05/98  
Initial Proposal: 1994

# Project Statement

BUFF-C-602.000  
Priority: 999  
Page Num: 0136

Title : PREPARE DOE FOR ARCHEOLOGICAL SITES

Funding Status: Funded: 0.00 Unfunded: 20.00

Servicewide Issues : C02 (ID & EVAL)  
Cultural Resource Type: SITE (Archeological Site)  
N-RMAP Program codes :

10-238 Package Number : 116

## Problem Statement

During the course of the contracted archeological studies at the park from 1978 to 1986, approximately 40 sites were identified as having National Register significance. Of these 40, only two have been submitted to the State Historic Preservation Officer for eligibility ruling. Twenty of the 40 sites were incorporated into the archeological amendment for Boxley Valley. The remaining sites need an official Determination of Eligibility or nomination to the National Register. The archeological resources at the National River have been underrepresented on the National Register. We have 22 additional sites recorded since 1986 that are eligible for nomination.

## Description of Recommended Project or Activity

Determinations of Eligibility or National Register nominations should be prepared for all sites identified as having significance meeting the National Register criteria. Presently, we have over forty sites eligible.

### BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	Cyclic	10.00	0.20
Year 2:	RES	Cyclic	5.00	0.10
Year 3:	RES	Cyclic	5.00	0.10

Last Update: 02/05/98  
Initial Proposal: 1994

Project Statement

BUFF-C-602.000  
Priority: 999  
Page Num: 0137

	=====	
Total:	20.00	0.40

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : NHPA ((106) NAT. HIST. PRES.)  
ARPA (ARCH. RES. PROT. ACT.)

Explanation: NAGPRA

Last Update: 02/13/98  
Initial Proposal: 1995

## Project Statement

BUFF-C-603.000  
Priority: 4  
Page Num: 0138

Title : INVENTORY AND PROTECT CAVE ARCHEOLOGY

Funding Status: Funded: 0.00 Unfunded: 40.00

Servicewide Issues : C02 (ID & EVAL)  
C07 (SITE PROTCT)  
Cultural Resource Type: SITE (Archeological Site)  
N-RMAP Program codes : C00 (Collections and Data Management)

10-238 Package Number :

## Problem Statement

Caving is a popular activity in the region and the caves in the park are receiving an increasing amount of use from both individual park visitors and organized caving groups. A cave management plan is in effect, addressing the cave resources. The park needs to effectively deal with vandalism. The management policies of the NPS as well as the preservation and protection mandates from NEPA, NHPA, Executive order 11593, Antiquities Act of 1906, and the Act of 1972 establishing the Buffalo National River all address the needs for cave management and cultural resources. To ignore these mandates is irresponsible and leads to irreplaceable loss of our valuable cultural heritage. Many of the archeological sites in caves were used for human burials.

## Description of Recommended Project or Activity

An archeological survey of all existing known caves should be conducted as soon as possible. Caves with identified sites should be evaluated on the park site vulnerability form. If there is site disturbance, the damage should be assessed, surveyed, and mitigated. Mitigation would include re-establishing a natural floor by scientifically excavating the damaged area, with additional work to correct any disturbance to the cave environment.

## BUDGET AND FTES:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTes
			=====	
Total:			0.00	0.00

Last Update: 02/13/98  
Initial Proposal: 1995

Project Statement

BUFF-C-603.000  
Priority: 4  
Page Num: 0139

-----UNFUNDED-----

	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	Recurring	10.00	0.10
Year 2:	RES	Recurring	10.00	0.10
Year 3:	RES	Recurring	10.00	0.10
Year 4:	RES	Recurring	10.00	0.10
		Total:	===== 40.00	0.40

(Optional) Alternative Actions/Solutions and Impacts

Alternative action would be to gate all the entrances to disturbed caves. This would be very costly and time consuming. It would also discourage future ethical use of the caves

Compliance codes : ARPA (ARCH. RES. PROT. ACT.)  
NHPA ((106) NAT. HIST. PRES.)

Explanation: NAGPRA

Last Update: 02/05/98  
Initial Proposal: 1996

# Project Statement

BUFF-C-604.001  
Priority: 999  
Page Num: 0140

Title : 3NW539 MATERIAL ANALYSIS  
Sub-title:

Funding Status: Funded: 0.00 Unfunded: 8.00

Servicewide Issues : C02 (ID & EVAL)  
C03 (SITE DOC)  
Cultural Resource Type: SITE (Archeological Site)  
N-RMAP Program codes : R00 (Social Science Research)

10-238 Package Number :

## Problem Statement

The site 3NW539 was emergency excavated in 1985 by the Arkansas Archeological Survey. This site had two exposed fire pits eroding into the Buffalo River. It was determined to excavate the features without funding for the analysis of the material. The material recovered consists of lithics, ceramics, floral, and faunal material, all of which require different levels of expertise, analysis, and identification. It is necessary to conduct a chronometric dating (C14) of the two features to determine an age of occupation.

## Description of Recommended Project or Activity

Chronometric dating of the carbon samples, thermoluminescence dating of the ceramic sherds, floral analysis by a professional botanist, faunal analysis by a biologist, and lithic identification by an experienced scientist.

### BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MIT	One-time	8.00	0.10
Total:			8.00	0.10



Last Update: 02/05/98  
Initial Proposal: 1996

Project Statement

BUFF-C-604.001  
Priority: 999  
Page Num: 0141

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : ARPA (ARCH. RES. PROT. ACT.)  
NHPA ((106) NAT. HIST. PRES.)

Explanation:

Last Update: 02/12/98  
Initial Proposal: 1998

## Project Statement

BUFF-C-604.002  
Priority: 10  
Page Num: 0142

Title : ARTIFACT ANALYSIS AND REPORT WRITING  
Sub-title:

Funding Status: Funded: 0.00 Unfunded: 25.00

Servicewide Issues : C02 (ID & EVAL)  
Cultural Resource Type: COMB (Combination)  
N-RMAP Program codes :

10-238 Package Number :

## Problem Statement

In June 1999, the Arkansas Archeological Society (AAS) in cooperation with the Midwest Archeological Center, and Buffalo National River will conduct an archeological training program at Buffalo National River. The two year training program will focus on archeological field techniques, lab procedures, site analysis and a final report. AAS coordinates the project and supplies the manpower and equipment. NPS will provide artifact analysis and funding for the final report. The analysis and final report are critical to the understanding of the site and the project. The Cherokee village site is reported to be the only Cherokee village inhabited during the Trail of Tears period in Arkansas. It is critical and very significant to the understanding of State history, Native American history and Buffalo National River's role in the preservation and interpretation of such a unique archeological site. This project is GPRA Goals 1a8, Archeological Sites are Recorded in Good Condition, and 1b4, Archeological Sites are Maintained on a Database.

## Description of Recommended Project or Activity

In Year 1 artifact analysis would be conducted on historic artifacts associated with the Cherokee who were forced to migrate from Tennessee into the Ozarks between 1817 and 1826 when a Cherokee Reservation was established encompassing the Buffalo River Valley. The Cherokee brought with them unique material that clearly identifies an archeological site as Cherokee. The analysis of the artifacts the first year are critical to assessing the site and planning for the second year of the training program. The second year will continue with artifact analysis followed by a final report of the project. Artifact material will include historic ceramics, copper used for ornamentation, vegetal material, lithics, and other early 19th century material. The final report will include any appropriate maps, diagrams, illustrations, and analysis with recommendations for future research, preservation, and interpretation.

	Project Statement	BUFF-C-604.002
Last Update: 02/12/98		Priority: 10
Initial Proposal: 1998		Page Num: 0143

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	10.00	0.10
Year 2:	RES	One-time	15.00	0.10
			=====	
Total:			25.00	0.20

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : NHPA ((106) NAT. HIST. PRES.)  
ARPA (ARCH. RES. PROT. ACT.)

Explanation: NAGPRA

Project Statement  
Last Update: 02/12/98  
Initial Proposal: 1996  
BUFF-C-605.001  
Priority: 12  
Page Num: 0144

Title : DATA RECOVERY OF LOOTED ARCHEOLOGICAL SITES  
Sub-title:

Funding Status: Funded: 5.00 Unfunded: 100.00

Service-wide Issues : C01 (OVERVIEW)  
C04 (DATA RECOV)  
Cultural Resource Type: SITE (Archeological Site)  
N-RMAP Program codes : R00 (Social Science Research)

10-238 Package Number :

#### Problem Statement

Sites within BNR have been heavily looted over 100 years. Some sites show signs of looting within minutes of our visiting (an apple that is still white and not browned from exposure). It is not uncommon for families to go dig on a nice day much like fishing or hiking together. It is known that a "clean" site, one that shows no signs of digging, is less apt to be dug. The restoration of the looted site by Park staff is timely, costly, and multidivisional. This type of cooperative activity needs financial support. There is a growing interest from the local communities to restore looted site; however, the park does not have the resources to meet their enthusiasm. This project is identified as GPRA goal 1a8, Archeological Sites in Good (Stable) Condition.

#### Description of Recommended Project or Activity

First phase of the data recovery consists of surface survey and collection of the disturbed areas and mapping looter pits and back piles. After the pits are mapped and surface collected, we will screen the back piles into the looted pits, retaining the archeological material for analysis and comparative studies. Analysis consists of lithic identification, ceramic thermoluminescence dating, faunal and floral identification, human bone identification coupled with consultation with any affiliated Native American. A site report and data interpretation would then be written for selective distribution.

	Project Statement	BUFF-C-605.001
Last Update: 02/12/98		Priority: 12
Initial Proposal: 1996		Page Num: 0145

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1997:	PKBASE-CR	MIT	One-time	5.00	0.10
				=====	
Total:				5.00	0.10
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MIT	Recurring	25.00	0.30
Year 2:		MIT	Recurring	25.00	0.30
Year 3:		MIT	Recurring	25.00	0.30
Year 4:		MIT	Recurring	25.00	0.30
				=====	
Total:				100.00	1.20

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : ARPA (ARCH. RES. PROT. ACT.)  
NHPA ((106) NAT. HIST. PRES.)

Explanation: 516 DM6 APP. 7.4 B(2), NAGPRA

	Project Statement	BUFF-C-606.001
Last Update: 02/12/98		Priority: 999
Initial Proposal: 1996		Page Num: 0146

Title : SITE VULNERABILITY ASSESSMENTS  
 Sub-title:

Funding Status:      Funded: 5.00      Unfunded: 100.00

Servicewide Issues : C02 (ID & EVAL)  
    C03 (SITE DOC)  
 Cultural Resource Type: SITE (Archeological Site)  
 N-RMAP Program codes : C00 (Collections and Data Management)

10-238 Package Number :

#### Problem Statement

We have over 500 known archeological sites in the Buffalo National River. These sites are impacted differently. Some are located in highly visited area, others in remote wilderness areas. Many sites are either located in bluffshelters or river terraces that experience periodic flooding and erosion. The sites have a unique combination of factors affecting the stability and integrity. We need to conduct a systematic assessment of all BNR sites for their vulnerability to natural and cultural deterioration so we can implement a monitoring program. This project is identified as GPRA goal 1a9, Archeological Site Assessment.

#### Description of Recommended Project or Activity

The first step is to physically locate the recorded sites to assess their vulnerability. There are over 500 sites along the Buffalo, some in remote wilderness and others buried under bridges. A site vulnerability assessment will address methods of destruction, levels of destruction, accessibility, and future scheduled visits. A site vulnerability form is used for sites recorded since 1995. However, over 465 sites predate 1995 recording and need to be assessment for vulnerability. Most importantly an assessment will establish a baseline for monitoring deterioration and vandalism of the sites.

#### BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1997:	PKBASE-OT	MON	Recurring	5.00	0.10

	Project Statement	BUFF-C-606.001
Last Update: 02/12/98		Priority: 999
Initial Proposal: 1996		Page Num: 0147

		Total:	=====	5.00	0.10
-----UNFUNDED-----					
	Activity	Fund Type	Budget (\$1000s)	FTEs	
Year 1:	MON	Cyclic	25.00	0.20	
Year 2:	MON	Cyclic	25.00	0.20	
Year 3:	MON	Cyclic	25.00	0.20	
Year 4:	MON	Cyclic	25.00	0.20	
		Total:	=====	100.00	0.80

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : ARPA (ARCH. RES. PROT. ACT.)  
NHPA ((106) NAT. HIST. PRES.)

Explanation: NAGPRA

Last Update: 02/12/98  
Initial Proposal: 1998

## Project Statement

BUFF-C-607.000  
Priority: 999  
Page Num: 0148

Title : ARCHEOLOGICAL SITE STABILIZATION FROM EROSION

Funding Status: Funded: 0.00 Unfunded: 260.00

Servicewide Issues : C05 (TREATMENTS)  
Cultural Resource Type: SITE (Archeological Site)  
N-RMAP Program codes :

10-238 Package Number :

## Problem Statement

We have continued erosion from flooding and surface sheet run-off. During the agricultural period before the park was established farmers removed trees up to the river banks to acquire more tillable land. This left little or no vegetation and root support for the riverbanks. Archeological sites are frequently within the floodplain and exposed during flood episodes. Historic river crossings, pioneer settlements, and prehistoric settlements unique to the Buffalo River Valley are being lost with each flood. The Staff Hydrologist has established a very successful streambank stabilization and riparian restoration technique. His stabilization efforts were focused on stabilizing the river channel and reduction in riverbank erosion. Now it is time to apply his techniques to stabilization of archeological sites that are on the National Register of Historic Places.

## Description of Recommended Project or Activity

First; identify archeological sites that meet the criteria for stabilization and are on the National Register. We presently have five sites that meet those criteria. Secondly, hire an archeological crew that will test the sites for accurate site significance and material analysis. The five known sites listed on the National Register are based on surface collections and random shovel testing. More complete and thorough determination is necessary. Third; a stabilization crew would be hired for the actual cedar anchoring, bank reconstruction, and replanting of native tree species. Fourth; is the analysis and report writing of the project and video documentation of the project and successful stabilization.



Last Update: 02/12/98  
Initial Proposal: 1998

Project Statement

BUFF-C-607.000  
Priority: 999  
Page Num: 0149

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MIT	One-time	75.00	1.00
Year 2:	MIT	One-time	75.00	1.00
Year 3:	MIT	One-time	75.00	1.00
Year 4:	RES	One-time	35.00	0.30
Total:			=====	=====
			260.00	3.30

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : NHPA ((106) NAT. HIST. PRES.)  
ARPA (ARCH. RES. PROT. ACT.)

Explanation: NAGPRA

Project Statement  
Last Update: 01/27/98  
Initial Proposal: 1994

BUFF-N-100.000  
Priority: 4  
Page Num: 0150

Title : RESOURCE MANAGEMENT; PROGRAM ADMINISTRATION

Funding Status: Funded: 80.00 Unfunded: 180.00

Service-wide Issues : N24 (OTHER (NATURAL))  
C83 (GEN CR MNGT)  
Cultural Resource Type: COMB (Combination)  
N-RMAP Program codes : S00 (Science Consultation and Oversight)

10-238 Package Number :

#### Problem Statement

Resource management programs entail administrative support to develop budget and project proposals, planning documents, prepare environmental compliance documents, and developing MOU and cooperative agreements with outside agencies. Additional staff time is spent on supervisory responsibilities, such as training, time sheets, evaluations, etc.

Additional assistance is needed for the water quality program and the cultural resource program. These programs have expanded in scope through grants and special funding in the amount of over \$1,000,000 since 1990. A hydrotechnician and cultural resource technician are both needed for routine monitoring of on-going projects.

The Resource Management Division lacks any dedicated clerical support.

The division also needs support personnel (hydrotechnician and cultural resource technician). See CR-MAP (BUFF-N-100.001) for funding and FTE information.

#### Description of Recommended Project or Activity

Establish and fund a division clerk position from ONPS source to assist with Resource Management Division administrative duties.

Establish and fund from ONPS source a hydrotechnician and cultural resource technician.

Last Update: 01/27/98  
Initial Proposal: 1994

Project Statement

BUFF-N-100.000  
Priority: 4  
Page Num: 0151

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1994:	PKBASE-NR	ADM	Recurring	80.00	2.00
				=====	
Total:				80.00	2.00
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		ADM	Recurring	45.00	1.00
Year 2:		ADM	Recurring	45.00	1.00
Year 3:		ADM	Recurring	45.00	1.00
Year 4:		ADM	Recurring	45.00	1.00
				=====	
Total:				180.00	4.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.7

Last Update: 01/27/98  
Initial Proposal: 1998

## Project Statement

BUFF-N-100.001  
Priority: 999  
Page Num: 0152

Title : MEET CR-MAP PROFILE REQUIREMENTS  
Sub-title:

Funding Status: Funded: 0.00 Unfunded: 1436.00

Servicewide Issues : N24 (OTHER (NATURAL))  
C86 (HISTORY)

Cultural Resource Type:  
N-RMAP Program codes : OTH (Other)

10-238 Package Number :

## Problem Statement

The Natural Resource Management Assessment Program (NR-MAP) was developed in 1990 to compare resource needs/issues to current staffing and to develop a profile of staff needs. The program has since been expanded to include cultural resources.

Buffalo National River is a 95,000+ acre national river with narrow boundaries (1 mile in many cases) and 135 miles in length.

In 1995 a division of Resource Management was established containing a chief, historian, hydrologists, resource management specialist, biotechnician, term biotech., Intake trainee, and SCAs, An archeologist position has been established under the Interpretation Division. Project load and issues have increased dramatically with the division establishment. Over \$1,000,000 in project funds have been received since 1992. Issues range from stocking of exotic species (fish and mammals) by the State Game and Fish Commission to external threats such as damming of major tributaries of the Buffalo River.

R-MAP analysis indicates that 29.5 additional FTE are needed to meet existing work loads in resource management. Requests from park have continually documented the need for a fisheries biologist, hydrotechnician, cave specialist, cultural resource technician, fire ecologist, and landscape architects.

## Description of Recommended Project or Activity

Designate and fill positions to meet R-MAP profile analysis of needs in resource management. Twenty-nine FTE have been identified. Priorities in filling these positions should be the following:

Position	Cost/Year	Grade
Cave specialist/geologist	59.0	GS -9/11

Last Update: 01/27/98  
Initial Proposal: 1998

Project Statement

BUFF-N-100.001  
Priority: 999  
Page Num: 0153

Fisheries biologist	59.0	GS - 11
Hydrologic Technician	41.0	GS - 7
Landscape Architect	59.0	GS - 11
Fire Ecologist	59.0	GS - 11
Cultural Resource Technician	41.0	GS - 7
Archeological Technician	41.0	GS - 7

Total of Seven Position at approx. \$359,000 per year.

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MON	Recurring	359.00	7.00
Year 2:	MON	Recurring	359.00	7.00
Year 3:	MON	Recurring	359.00	7.00
Year 4:	MON	Recurring	359.00	7.00
Total:			1436.00	28.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : OTHER ()

Explanation: Additional of personnel

	Project Statement	BUFF-N-101.000
Last Update: 01/29/98		Priority: 21
Initial Proposal: 1993		Page Num: 0154

Title : MANAGE WILDLAND FIRE PROGRAM(SEE N-100.001 FOR FTE)

Funding Status: Funded: 0.00 Unfunded: 0.00

Servicewide Issues : N07 (NAT FIRE REGM)  
 Cultural Resource Type:  
 N-RMAP Program codes : F00 (Prescribed Fire Management)  
                               F01 (Prescribed Burn Operations)

10-238 Package Number :

### Problem Statement

Buffalo National River has a major wildland fire program with suppression and prescribed fire components. Prescribed fire programs are utilized for fuel reduction, wildlife habitat maintenance, cultural landscape maintenance, and vegetative community restoration. In the monitoring and design of an effective prescribed fire program the presence of a fire ecologist is essential. The park currently lacks such a position.

### Description of Recommended Project or Activity

Fund fire ecologist position. Fire management program for NPS areas in Arkansas. See CR-MAP (BUFF-N-100.001) for funding and FTE information.

### BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
		Total:	0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
		Total:	0.00	0.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Last Update: 01/29/98  
Initial Proposal: 1993

Project Statement

BUFF-N-101.000  
Priority: 21  
Page Num: 0155

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E

Last Update: 01/29/98  
Initial Proposal: 1994

## Project Statement

BUFF-N-110.001  
Priority: 22  
Page Num: 0156

Title : MONITOR WATER QUALITY  
Sub-title: PROGRAM SUPPORT

Funding Status: Funded: 387.00 Unfunded: 88.00

Servicewide Issues : N20 (BASELINE DATA)  
N11 (WATER QUAL-EXT)

Cultural Resource Type:

N-RMAP Program codes : Q00 (Water Resources Management)  
Q01 (Water Resources Management)

10-238 Package Number :

## Problem Statement

### Introduction

Buffalo National River (BUFF) is a free-flowing stream in northern Arkansas famous for its natural scenic beauty as well as canoeing, fishing, and other recreational activities. The National Park Service's jurisdictional boundary includes a 132 mile river corridor from near the headwaters to the confluence with the White River. BUFF manages eleven percent of the watershed, sharing ownership with Ozark National Forest (26%), Arkansas Game and Fish Commission (3%) and many private land-owners (60%). A myriad of land use activities, mostly related to agriculture, occur in the watershed including logging, beef cattle grazing, dairy, swine, and poultry operations.

The middle section of the Buffalo River (Figure 1) has been designated by the Arkansas Department of Pollution Control and Ecology as impaired for water-based recreational uses due to agricultural nonpoint source pollution (ADPCE, 1992). Because of a combination of land ownership and physiographic factors, this area is being cleared and converted to pasture at the highest rate of any area within the watershed (Stephenson and Mott, 1992). Additionally, the widespread failure of area farmers to apply for and comply with confined animal permits and regulations resulted in the issuance of a two year moratorium on the issuing of any new permits in the watershed.

### Resource Significance

The enabling legislation (P.L. 92-237) for BUFF states the park was created "for the purposes of conserving and interpreting an area containing unique scenic and scientific features, and preserving as a free-flowing stream an important segment of the Buffalo River...". The Resource Management Plan (NPS, 1992) approved for BUFF lists water quality as the "Number One natural resource priority for Buffalo National River. Water is the park's major resource and water-based recreation is the major



Last Update: 01/29/98  
Initial Proposal: 1994

## Project Statement

BUFF-N-110.001  
Priority: 22  
Page Num: 0157

recreational activity. Protection of water quality therefore must be ensured since any type of contamination could lead to serious degradation of not only the water itself, but also have a deleterious effect on other park resources, i.e., wildlife, fisheries and cave life, as well as visitor and employee health".

In 1992, over one million visitors came to BUFF with the main recreational activities being canoeing and swimming. The State of Arkansas has recognized the significant value of the Buffalo River through Extraordinary National Resource Waters and Natural and Scenic Waterway designations. Streams with these designations are protected by an antidegradation policy and are to be maintained through a variety of means; including protection of instream habitat and land management protective of the watershed.

### Severity of Resource Threat

Agricultural development and associated land clearing, nonpoint source pollution, gravel loading, stream-bank erosion, alteration of hydrologic runoff and base flow characteristics, and habitat destruction are cumulative impacts which represent the most significant threat to the integrity of BUFF as a natural freeflowing stream. Because of the identified threat to aquatic resources from external sources, BUFF initiated a water quality monitoring program in 1985 which routinely monitors nine river sites, twenty tributaries, and three springs.

Water quality monitoring by ADPCE has also detected water quality degradation in this portion of the watershed and resulted in the designation of 6.9 miles of the Buffalo River and 23.9 miles of Bear Creek as impaired by nonpoint source pollution. In a similar action, the Arkansas Soil and Water Conservation Commission listed this portion of the Buffalo River and Richland Creek as threatened in their Nonpoint Source Pollution Assessment Report which is prepared pursuant to the Clean Water Act. BUFF water quality monitoring has measured high flow bacterial concentrations of 45000 col/100 mL in one of the project area tributaries.

### Description of Recommended Project or Activity

Continue Water Quality Monitoring Program at the present level. Collect water quality samples on a monthly basis from nine river sites, twenty tributaries, and three springs. The parameters monitored include discharge, pH, specific conductance, temperature, dissolved oxygen, fecal coliform bacteria, turbidity, nutrients, salts, and metals. Continue to build water quality database and generate yearly reports based on statistical analysis of water quality data. Continue cooperative networking with the Arkansas Department of Pollution Control and Ecology, the Natural Resource Conservation Service (USDA), Arkansas Soil

Last Update: 01/29/98  
Initial Proposal: 1994

Project Statement

BUFF-N-110.001  
Priority: 22  
Page Num: 0158

and Water Conservation Commission, U.S. Geological Survey (See BUFF-N-100.002), the Water Resource Research Center at the University of Arkansas and other agencies and institutions to facilitate data collection, management, and interpretation and to instigate corrective measures.

The program is directed by the staff hydrologist (GS-11) with most field work conducted by a term appt. biological technician (GS-5). This is an ongoing program which received \$27,000 a year for three years (FY92-94) from the Water Resources Division. In FY95, the program was funded from the park base.

The program currently needs a full time hydrologic technician and support for the water program. Since 1990 the program has grown to incorporate joint programs with state agencies such as the Arkansas Dept. of Pollution Control and Ecology, the Natural Resource Conservation Service, U.S. Geological Survey(USGS) and the USGS Biological Resource Division.

See CR-MAP (BUFF-N-100.001) for a breakdown of FTE and budget information related to this project.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1994:	PKBASE-NR	MON	Recurring	27.00	0.60
1995:	PKBASE-NR	MON	Recurring	60.00	1.00
1996:	PKBASE-NR	MON	Recurring	60.00	1.00
1997:	PKBASE-NR	MON	Recurring	60.00	1.00
1998:	PKBASE-NR	MON	Recurring	60.00	1.00
1999:	PKBASE-NR	MON	Recurring	60.00	1.00
2000:	PKBASE-NR	MON	Recurring	60.00	1.00
Total:				387.00	6.60
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		PRO	Recurring	22.00	0.00
Year 2:		PRO	Recurring	22.00	0.00
Year 3:		PRO	Recurring	22.00	0.00

Last Update: 01/29/98  
Initial Proposal: 1994

Project Statement

BUFF-N-110.001  
Priority: 22  
Page Num: 0159

Year 4:	PRO	Recurring	22.00	0.00
			=====	
		Total:	88.00	0.00

(Optional) Alternative Actions/Solutions and Impacts

Discontinue Water Quality Monitoring Program. This would result in the lack of water quality information and the inability for park managers to react to water quality problems before they reached a crisis level and to answer water quality concerns of park visitors and neighbors. Additionally, statistically valid background data would not be collected and BUFF would have only limited data, that which has already been collected, to assess the level of change incurred by future land-use activities and pollution sources.

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 App. 7.4 E(2)

Project Statement  
Last Update: 01/29/98  
Initial Proposal: 1998

BUFF-N-110.003  
Priority: 999  
Page Num: 0160

Title : STAFF HYDROLOGIC TECHNICIAN  
Sub-title: (SEE N-100.001 FOR FTE)

Funding Status: Funded: 0.00 Unfunded: 0.00

Servicewide Issues : N11 (WATER QUAL-EXT)  
N12 (WATER FLOW)

Cultural Resource Type:  
N-RMAP Program codes : Q00 (Water Resources Management)

10-238 Package Number :

#### Problem Statement

Water quality and related resources are identified in the park's enabling legislation, master plan, statement for management and other documents as the primary resource to be protect by this NPS unit. Over the past fifteen years BUFF has developed a sophisticated water quality monitoring and research program, mainly through the staffing of a base-funded park hydrologist. During these years, the water resources program and the issues addressed have become increasingly complex, requiring coordination with State agencies (Arkansas Department of Pollution Control and Ecology, Arkansas Soil and Water Conservation Commission, Arkansas Department of Health, etc.), Federal agencies (Environmental Protection Agency, United States Geological Survey, United States Forest Service, Natural Resources Conservation Service, United States Army Corps of Engineers, National Weather Service, etc.), university and government researchers, conservation districts, conservation groups, and others. In addition, the staff hydrologist works on water resources projects on both a regional and national scale, ranging from New River Gorge National River to Grand Tetons National Park. It has become impossible for the hydrologist to conduct routine day to day aspects of water quality monitoring, educational programs, flood warning system maintenance, air quality monitoring, streambank restoration, database management, drafting, and other activities. For the past four years BUFF has been able to employ a term biological technician through special funding avenues to carry out these activities more suited to a technician graded employee. These funds will soon expire and BUFF will be forced to lose this appointment and make drastic cuts in the level of water resource activities presently conducted. This will also affect other parks and the service in general if the hydrologist is not able to provide needed expertise to parks lacking hydrologic specialists.

Last Update: 01/29/98  
Initial Proposal: 1998

Project Statement

BUFF-N-110.003  
Priority: 999  
Page Num: 0161

Description of Recommended Project or Activity

Dedicate a FTE and the ONPS funds necessary to staff a full-time hydrologic technician at Buffalo National River.

See project statment CR-MAP (BUFF-N-100.001) for budget and FTE information.

BUDGET AND FTEs:

-----FUNDED-----					
Source	Activity	Fund Type	Budget (\$1000s)	FTEs	
			=====		
Total:			0.00	0.00	
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
				=====	
		Total:	0.00	0.00	

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes :

Explanation:

Last Update: 03/23/95  
Initial Proposal: 1994

## Project Statement

BUFF-N-111.000  
Priority: 999  
Page Num: 0162

Title : SURVEY SURFACE WATER FOR GIARDIA

Funding Status: Funded: 0.00 Unfunded: 14.00

Servicewide Issues : N20 (BASELINE DATA)  
N18 (VIS USE-BCTRY)

Cultural Resource Type:

N-RMAP Program codes : Q00 (Water Resources Management)  
Q01 (Water Resources Management)

10-238 Package Number :

## Problem Statement

Giardiasis, an intestinal disorder, is caused by a flagellate protozoan (*Giardia lamblia*) shed in the feces of man and animals. Often associated with beavers, the presence of giardia has been confirmed in many NPS waters. Due to an increase in the number of beaver in the river and its tributaries, both visitors and managers have expressed a public safety concern regarding the possible presence of giardia at Buffalo National River. Varying levels of fecal coliform contamination have been identified at the water quality stations monitored indicating that giardia could be a widespread problem. Because BUFF's springs and streams are typically very clear, park visitors are often tempted to regard that water as clean and drink it in a raw state, possibly ingesting giardia cysts.

No information is currently available regarding the extent of giardia contamination in the waters of Buffalo National River.

## Description of Recommended Project or Activity

Quantify the number of giardia present in water samples from a variety of locations so that informed public caution statements can be presented in park literature if necessitated. Sampling areas would include those with a high population of beavers, with a previous history of poor water quality, with usage as a public water supply, with heavy recreational use, and with relatively pristine water quality so that comparisons can be made and conclusions drawn. Samples would be collected once each season and would cover a variety of flow conditions. The giardia survey would compliment the existing Water Quality Monitoring Program and would take one year to collect data and a portion of the second to complete interpretation and generate a report with accompanying recommendations.

Last Update: 03/23/95  
Initial Proposal: 1994

Project Statement

BUFF-N-111.000  
Priority: 999  
Page Num: 0163

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MON	One-time	10.00	0.00
Year 2:	MON	Cyclic	4.00	0.10
Total:			=====	=====
			14.00	0.10

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 App.2, 1.6 516 DM6 App.7.4

Project Statement  
Last Update: 03/03/95  
Initial Proposal: 1995

BUFF-N-112.000  
Priority: 0  
Page Num: 0164

Title : DEVELOP WATER QUALITY BIOMONITORING PROGRAM

Funding Status: Funded: 85.28 Unfunded: 0.00

Servicewide Issues : N20 (BASELINE DATA)  
N11 (WATER QUAL-EXT)

Cultural Resource Type:  
N-RMAP Program codes : Q00 (Water Resources Management)  
Q01 (Water Resources Management)

10-238 Package Number :

## Problem Statement

### Introduction

Buffalo National River (BUFF) is a 150 mile long free-flowing stream in northern Arkansas famous for its scenic beauty as well as canoeing, fishing, and other recreational opportunities. The National Park Service's jurisdictional boundary includes a continuous 132 mile river corridor from near the headwaters to the confluence with the White River. Eleven percent of the watershed is within BUFF's boundaries. Remaining lands within the watershed are a mix of public and private ownership; Ozark National Forest (26%), Arkansas Game and Fish Commission (3%), private (60%). A myriad of land use activities, mostly related to agriculture, occur within the watershed including logging, beef, dairy, swine, and poultry operations.

Current agricultural use, increased forest clearing for pasture, and poor land management practices, occurring in an area of karstic geology, are resulting in degradation of the river (Mott, 1991). Because of the pollution source (agricultural nonpoint), high levels of bacteria, nutrients, turbidity and sediment occur during rain events when pasture surfaces and holding lagoons are flushed or overflow into surface and subsurface drainage networks. In order to understand the ecological implications of nonpoint source loading and the relationship of nutrient and sediment concentrations to land use patterns in the area, a biological monitoring program of tributaries and the main-stem river is needed.

### Resource Significance

Clean water in a free-flowing river is BUFF's primary resource. BUFF's enabling legislation (P.L. 92-237) states the National River was established "for the purposes of conserving and interpreting an area containing unique scenic and scientific features, and preserving as a free-flowing stream an important segment of the Buffalo River...". The BUFF Master Plan (1977) recognizes the river as the "...central element of the whole array of natural and historical features in its setting.". Almost



Last Update: 03/03/95  
Initial Proposal: 1995

## Project Statement

BUFF-N-112.000  
Priority: 0  
Page Num: 0165

a quarter of the river flows through designated wilderness areas.

Endangered gray and Indiana bats forage along the Buffalo River for adult forms of aquatic insects. Threatened bald eagles winter along the Buffalo. Resident species which are candidates for listing include the aquatic Ozark Hellbender (C2) and the Nearctic Paduniellan caddisfly.

In 1992, nearly one million people visited BUFF with most recreational use dependent upon clean water; such as canoeing, swimming, and fishing. The State of Arkansas has recognized the significant value of the Buffalo River through Extraordinary National Resource Waters and Natural and Scenic Waterway designations. The water quality of streams with these designations are afforded an additional level of protection through an antidegradation policy.

## Severity of Resource Threat

Agricultural development and associated forest clearing, nonpoint source pollution, gravel loading of stream channels, stream-bank erosion, alteration of hydrologic runoff and base flow characteristics, and habitat destruction are cumulative impacts representing the most significant threat to the integrity of BUFF as a natural free-flowing stream. Because of the identified threats to aquatic resources from external sources, BUFF initiated a water quality monitoring program in 1985. Results show sections of the river with high nutrient, bacteria, and turbidity levels as compared to monitoring stations on less disturbed sections (Mott, 1991).

Water quality monitoring by Arkansas Department of Pollution Control and Ecology (ADPCE) has designated 6.9 miles of the Buffalo River and 23.9 miles of Bear Creek as impaired by nonpoint source pollution. Water quality monitoring has measured high flow bacterial concentrations as high as 45,000 colonies per 100 ml of sample in one tributary. In response to these listings and NPS concerns, the USDA Soil Conservation Service submitted an application for federal assistance under P.L. 83-566 to initiate a Watershed Protection Water Quality Project.

A GIS analysis of forest clearing in one portion of the watershed showed a 126 percent increase in pasture from 1965 to 1983. Additionally, because suitable lands had already been cleared, conversion of forest land to pasture on slopes exceeding 14 degrees had increased by 214 percent (Stephenson and Mott, 1992).

Loss of soil and migration of gravel from the cherty, highly erodible hillsides, is theorized to cause water quality and physical habitat degradation within and adjacent to stream channels (Jacobson et. al., 1993).

## Problem Definition and Information Base

BUFF's water quality monitoring program has emphasized measurements of physicochemical characteristics to detect and

Project Statement  
Last Update: 03/03/95  
Initial Proposal: 1995

BUFF-N-112.000  
Priority: 0  
Page Num: 0166

quantify pollutants within stream ecosystems. However, physicochemical monitoring alone is insufficient for surveillance of pollutants or determining the health of an aquatic system. Physicochemical monitoring can only detect those pollutants for which tests are conducted; it assesses water quality only at the time the samples are collected and may fail to detect pollutants entering in pulses; and it does not allow assessment of the impacts of pollutants on the biological system.

Little is known regarding the community structure of Ozarkian streams. Many of the 30 or so published investigations on Ozarkian streams are of marginal value for biological monitoring because they provide too little taxonomic information, or are simple surveys of specific taxonomic groups that provide no quantitative data. Investigations of selected reference sites to establish biotic potentials of streams in the Ozarks have been undertaken.

The NPS must obtain a variety of data sets to quantify the threat posed by large scale changes in land use throughout the watershed. At this point, information on community structure of the river's macroinvertebrates is missing entirely. The NPS must establish a clear tie between watershed degradation, water quality, habitat alteration, and the health of aquatic biological communities if the processes and functions of the river ecosystem is to be protected.

#### Description of Recommended Project or Activity

Develop a water quality biomonitoring program for BUFF which emphasizes the community structure of benthic macroinvertebrates.

#### Feasibility and Methods

A aquatic biological monitoring program for BUFF will address several objectives:

1. Devise a biological water quality monitoring program for Buffalo National River and its tributaries.
2. Compare the effectiveness of standard benthological sampling techniques and rapid bioassessment methods as discriminators of environmental degradation.
3. Investigate the relationships between various physicochemical characteristics of stream habitats and community structure in order to begin work on establishing minimal water quality standards based on preserving biotic communities as well as human health and safety.
4. Initiate development of a taxonomic key to the aquatic macroinvertebrates of the Buffalo River. This key would be

## Project Statement

Last Update: 03/03/95  
Initial Proposal: 1995

BUFF-N-112.000  
Priority: 0  
Page Num: 0167

organized into two sections (keys to order and familial level and keys to genus and species) so that it may be used by both professionals and non-professionals.

Benthic macroinvertebrate samples will be collected from 24 sites within the watershed, at 3 month intervals, using two methods. These sites include eight springs (7 pristine, 1 disturbed), one near-pristine first order stream, one pristine second order stream, five third order streams of varying water quality, and four fourth order and four fifth order pristine sites on the Buffalo River. Physicochemical monitoring is already occurring at most of these sites.

Five samples will be collected from a variety of habitat types within riffles at each site each sampling date using a modified Hess stream bottom sampler. A second set of samples will be collected using rapid bioassessment techniques described in Hilsenhoff (1987). Samples of fish community structure to establish an Index of Biotic Integrity (Karr, 1981) will be collected three times a year using a combination of trapping, seining, and electroshocking. All specimens that can be reliably identified in the field will be enumerated, examined for disease, and returned to the stream. Specimens which can not be identified will be preserved for lab identification.

The abundance data collected at each site will be used to calculate a variety of metrics of community health. For macroinvertebrates these include species richness (raw, Margalef's, Menhinick's, rarefacted), species diversity (Simpson's, Shannon's, Hill's), and EPT (mayflies, stoneflies, caddisflies). These data will be used to develop a biotic index similar to ICI (Ohio EPA 1987). The same measures of richness and species diversity will be used for fishes. Comparisons between sites will be conducted using ANOVA and stepwise multiple comparison procedures. Relationships between physicochemical and biological measurements of water quality will be analyzed by step-wise multiple regressions and multivariate techniques.

Functional group comparisons between sites will be conducted based upon information in standard texts. Data will be analyzed with resemblance functions and cluster analysis to determine similarity among sites.

## Problem Resolution

The project will provide the information needed to interpret physicochemical results to ecosystem affects. A benthic macroinvertebrate monitoring program provides a closer indicator of system health than physical and chemical parameters alone.

## Transferability

The results of this project would be applicable to other Ozark streams including those administered by the NPS (i.e. Ozark National Scenic Riverways). The development of simplified keys

Last Update: 03/03/95  
Initial Proposal: 1995

# Project Statement

BUFF-N-112.000  
Priority: 0  
Page Num: 0168

specific to Buffalo River and its tributaries will be available to those area school which participate in the state Water Education Team program.

## Cost Effectiveness

The project will require two years to complete and identified costs are for the duration of the project:

Source	Item	
WRD	Travel, student salaries, expendable supplies, and equipment for fecal coliform anaylsis	
BUFF	Vehicles, equipment, lab support biologist salary, GIS land use study	11,000
UCA	Salary of principle investigator,	
UCA	Grant for student salaries, equipment, expendable supplies	
ADPCE	lab analysis of tributary samples (200+ samples)	15,000
TOTAL.....		86,270

In this proposal, BUFF is requesting \$15,000 in FY95 and \$9,800 in FY96. The other costs associated with the project are provided through in-kind contributions from the park and partner (University of Central Arkansas).

WRD=Water Resource Division, National Park Service  
BUFF=Buffalo National River  
UCA=University of Central Arkansas  
ADPCE=Arkansas Department of Pollution Control and Ecology

## References

ADPCE, 1992, Water quality inventory report; 1992: Arkansas Department of Pollution Control and Ecology, Little Rock, AR.

Hilsenhoff, W.L. 1987. An improved biotic index of organic stream pollution. Great Lakes Entomologist 20:31-39.

Jacobson, R.B, C.F. Rabeni, 1993. The importance of fluvial hydraulics to fish-habitat restoration in low-gradient alluvial streams. Freshwater Biology 29: 211-220.

Karr, J.R. 1981. Assessment of biotic integrity using fish communities. Fisheries 6:21-27.

## Project Statement

BUFF-N-112.000

Last Update: 03/03/95

Priority: 0

Initial Proposal: 1995

Page Num: 0169

Mott, D.N., 1991, Effects of pasture runoff on water chemistry, Buffalo National River, USA: in Sediment and Stream Water Quality in a Changing Environment: Trends and Explanation, IAHS Publ. no. 203, 1991.

Mott, D.N., 1991, Water quality report; 1985-1990: Buffalo National River, National Park Service, Harrison, AR.

Ohio Environmental Protection Agency. 1987. Biological criteria for the protection of aquatic life. Vols. 1-11. Surface Water Section, Division of Water Quality Monitoring and Assessment, Ohio Environmental Protection Agency, Columbus, Ohio.

Stephenson, T., and D. Mott, 1992, GIS analysis determines erosion potential at Buffalo National River basin: Park Science, Fall 1992, Corvallis, OR.

## BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	NON-PROFI	MON	One-time	4.98	0.00
	WATER-RES	MON	One-time	15.00	0.00
	UNIV-COLL	MON	One-time	17.50	0.00
	PKBASE-NR	MON	One-time	6.50	0.10
			Subtotal:	43.98	0.10
1996:	UNIV-COLL	MON	One-time	17.50	0.00
	PKBASE-NR	MON	One-time	6.50	0.10
	ST-LOCAL	MON	One-time	7.50	0.00
	WATER-RES	MON	One-time	9.80	0.00
			Subtotal:	41.30	0.10
			Total:	85.28	0.20
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
			Total:	0.00	0.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Last Update: 03/03/95  
Initial Proposal: 1995

Project Statement

BUFF-N-112.000  
Priority: 0  
Page Num: 0170

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 App. 7.4 E(2)

Last Update: 01/27/98  
Initial Proposal: 1995

## Project Statement

BUFF-N-113.000  
Priority: 3  
Page Num: 0171

Title : DEVELOP WATER RESOURCE MANAGEMENT PLAN

Funding Status: Funded: 262.00 Unfunded: 0.00

Servicewide Issues : N11 (WATER QUAL-EXT)  
N12 (WATER FLOW)

Cultural Resource Type:

N-RMAP Program codes : Q00 (Water Resources Management)  
Q01 (Water Resources Management)

10-238 Package Number :

## Problem Statement

Buffalo National River (BUFF) was established in 1972 by P.L. 92-237 "That for the purpose of conserving and interpreting an area containing unique scenic and scientific features, and preserving as a free-flowing stream an important segment of the Buffalo River for the benefit and enjoyment of present and future generations". Thus the river is the primary resource of this 95,000 acre unit, and its preservation is Buffalo National River's principal mandate.

The Buffalo River is also important to the culture and economy of Arkansas, draws an estimated one million visitors per year, and has been designated as an Extraordinary Resource Water by the Arkansas Department of Pollution Control and Ecology (ADPCE). This designation includes an antidegradation policy which states "... extraordinary resource waters...shall be protected by (1) water quality controls, (2) maintenance of natural flow regime, (3) protection of instream habitat, and (4) pursuit of land management protective of the watershed".

The National River's boundaries encompass only eleven percent of the 840,000 acre watershed, and the lower 132 miles of the river's 150 mile length. Land use practices within the watershed are exclusively uphill from the park and therefore all external pollution eventually drains to the river. Pollutants mainly arise from nonpoint agricultural activities but numerous other sources are recognized. Water diversions and habitat alterations within the watershed also impact the free-flowing nature of the Buffalo River and the aquatic organisms which inhabit the river and its tributaries.

Several studies have been conducted in the past ten years which indicate:

Landuse in the watershed is converting from forest to pasture at a rate of 3,436 acres per year, resulting in the doubling of agricultural land use in the past 30 years. Clearing is taking place on increasingly steeper slopes and pasture acreage is forecast to equal forest acreage by the year 2050.

## Project Statement

Last Update: 01/27/98  
Initial Proposal: 1995

BUFF-N-113.000  
Priority: 3  
Page Num: 0172

Water quality studies show increasing trends for fecal coliform bacteria. Also, a strong correlation exists between increased nutrient concentrations in the river and tributaries, and higher percentages of pasture and associated cattle, poultry, and hog operations in adjacent watersheds.

Storm runoff from pastures, confined animal operations, septic systems and other nonpoint sources result in bacteria counts that exceed state standards by 112 times and phosphate concentration that exceed standards by seven times.

Samples collected from the Buffalo River, its tributaries and springs, as part of the National Water Quality Assessment Program contained detectable concentrations of dieldrin, permethrin, DDE, tebuthiuron, trifluralin, atrazine, and metolachlor.

Biological monitoring indicates changes in community structure, function, and diversity are occurring and can be correlated to intensity of landuse and degraded water quality.

Issues currently being dealt with include a proposed dam on a major tributary, gravel mining in adjacent tributaries, changes in runoff hydrographs resulting from deforestation, habitat degradation caused by sediment aggradation, fisheries declines resulting from a downstream dam, recreational impacts, sediment from poorly designed roads, silvicultural activities, ground water withdrawals, hazardous waste spills, sewage treatment plants, and others.

Land use planning and zoning does not exist at the local government level (county); nor does the state regulate logging, residential developments, or most agricultural operations. The need to develop a coordinated watershed approach to issues involving local, state, and federal governments, and private citizens and groups, has been recognized for some time, but no formal process has been initiated to deal with the watershed's current and increasing problems.

## Description of Recommended Project or Activity

Despite the many recognized aquatic resource concerns at Buffalo National River, the water quality remains relatively high and the free-flowing nature relatively unaltered as compared to more developed areas of the state and nation. As northwest Arkansas's population and industry continues to grow, pollution in the river, and stream and aquifer withdrawals, can also be expected to increase and lead to further cumulative impacts to BUFF's aquatic resources.

After a series of preliminary meetings between representatives of BUFF and ADPCE, it was decided that a comprehensive watershed planning process is needed to define appropriate strategies for



Project Statement

BUFF-N-113.000

Last Update: 01/27/98  
Initial Proposal: 1995

Priority: 3  
Page Num: 0173

protecting and enhancing the aquatic resources of Buffalo National River. The development of a Water Resources Management Plan (WRMP) will involve a substantial commitment from both agencies, and will build on existing cooperative efforts such as:

The present moratorium placed on the Buffalo River watershed which precludes permitting of new confined animal operations utilizing liquid waste management systems.

EPA and ADPCE funded projects intended to investigate and correct current problems at confined animal operations.  
USGS National Water Quality Assessment Program.

NRCS watershed improvement/water quality enhancement project.  
Biological monitoring funded by the National Park Service and the University of Central Arkansas.

Karst dye-tracing and geologic mapping  
Land use studies conducted by the Center for Advanced Spatial Technologies at the University of Arkansas.

Numerous other studies and reports exist ranging from mussel species distribution to geomorphic classifications. An enormous volume of resource information is available, and one objective in developing a WRMP is to examine these data and findings with the intention of developing specific recommendations for aquatic resource protection. This comprehensive analysis would identify preferred management actions for the park's internal issues; more importantly, the plan would foster contacts with regulatory agencies, area commissions, and others, to address external issues.

Planning objectives have also been defined by the state which include enhancing public awareness, watershed modeling, developing site-specific water quality standards, and the eventual formation of a watershed council to provide public involvement in aquatic resource decision making. ADPCE has committed to a partnership with BUFF throughout this project and will directly provide both personnel and financial support to match BUFF and other NPS contributions.

The National River's hydrologist will take the lead in developing the WRMP, with major assistance provided by the Environmental Preservation Division of ADPCE. The Water Resources Division will assist with project guidance, reviews, and funding support. Numerous other state and federal agencies, and private citizens and groups, will be identified as potential stakeholders and invited to participate in issue resolution, as appropriate.

The hydrologist has previously completed Water Resource Scoping Reports for New River Gorge National River, Gauley River National Recreation Area, Bluestone National Scenic River, and Saguaro National Park, and has extensive experience with the WRMP planning process, issue identification, management alternatives analysis, and development of project statements and funding

Project Statement  
 Last Update: 01/27/98  
 Initial Proposal: 1995

BUFF-N-113.000  
 Priority: 3  
 Page Num: 0174

proposals. The Resource Management Division at BUFF has operated a water quality monitoring program for the past twelve years, and has amassed a large database and network of contacts which will be critical to the development of a high-quality planning document that has the support of area agencies and residents.  
 BUDGET

ITEM	SOURCE	AMOUNT (1000s)	
		FY98	FY99
Hydrologist Salary (lead author representing National Park Service)	BUFF	30	30
Hydro. Tech. Salary (fill in for hydrologist while devoting time to planning)	WRD BUFF	20 10	20 10
Envir. Engineer Salary (lead author representing State Regulatory Agency)	ADPCE	30	30
Related Studies (watershed specific studies to characterize scientific, social, and economic factors related to priority issues)	ADPCE	40	40
Computer/GIS support (spatial analysis of demographics, pollution loading, and other factors with graphical and tabular outputs)	ADPCE BUFF WRD	5 3 3	5 3 3
Travel Costs (travel between ADPCE headquarters {Little Rock} and BUFF {Harrison}, and watershed towns, for meetings)	ADPCE WRD BUFF	2 1.5 1.5	2 1.5 1.5
Overhead (meeting rooms, office space, vehicles, communications, etc.)	ADPCE BUFF	3 3	3 3
Publication Costs (procure GIS maps, copy and distribute drafts and final plan)	WRD		1
SUBTOTALS	BUFF (31%) ADPCE (53%) WRD (16%)	47.5 80 24.5	47.5 80 25.5
TOTALS	(100%)	152	153

With this proposal, BUFF is requesting \$24,500 in FY98 and \$25,500 in FY99 to be supplied through the Other Water-Related Issues category of the WRD project funding mechanism.

Last Update: 01/27/98  
Initial Proposal: 1995

Project Statement

BUFF-N-113.000  
Priority: 3  
Page Num: 0175

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1998:	ST-LOCAL	ADM	One-time	76.00	0.00
	PKBASE-NR	ADM	One-time	30.00	0.50
	WATER-RES	ADM	One-time	24.50	0.70
			Subtotal:	130.50	1.20
1999:	ST-LOCAL	ADM	One-time	76.00	0.00
	PKBASE-NR	ADM	One-time	30.00	0.50
	WATER-RES	ADM	One-time	25.50	0.70
			Subtotal:	131.50	1.20
			Total:	262.00	2.40

-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
			Total:	0.00	0.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B(4)

Last Update: 03/23/95  
Initial Proposal: 1994

Project Statement

BUFF-N-114.000  
Priority: 999  
Page Num: 0176

Title : SURVEY FISH FOR BIO-ACCUMULATION OF TOXINS

Funding Status: Funded: 0.00 Unfunded: 17.00

Servicewide Issues : N20 (BASELINE DATA)  
N11 (WATER QUAL-EXT)

Cultural Resource Type:

N-RMAP Program codes : Q00 (Water Resources Management)  
Q01 (Water Resources Management)

10-238 Package Number :

Problem Statement

Analysis of fish tissue is needed to determine if residues of toxic chemicals are present. Such analysis has not been performed previously at BUFF. Just to the north of BUFF's watershed, in Omaha, AR, is an EPA superfund site where PCB treated lumber, sawdust, and PCB based preservative were disposed in a sinkhole in association with a wood treatment plant. Leachate migration from the waste material caused significant ground and surface water contamination. There is at least one treatment facility located within BUFF's watershed and adjacent to the park and waste disposal practices there are unknown. Additionally, herbicides and pesticides are used in association with agricultural and silvicultural operations and by rural homeowners to control pests and weeds. Although large scale applications such as aerial spraying have not been employed in the watershed in several years, stream sediments may still be desorbing accumulations from past spraying. The karst geology and highly permeable soils of the area allow ready percolation of chemicals into ground water, and surface runoff can transport chemicals directly to surface waters. One of the major recreational activities at Buffalo River is fishing and large volumes of fish are consumed each year by park visitors. Presence or absence of accumulated toxins in these fish can only be speculated at this time.

Description of Recommended Project or Activity

On a one-shot basis, collect five Smallmouth Bass and five Channel Catfish from an upper, a middle, and a lower site on the river. Fish would be preserved and transported to a certified laboratory for grinding and analysis of edible portion of fish tissue. Additionally, liver and fat would be analyzed for accumulation of toxins. Cost of analysis is estimated at \$700 per sample with 18 total samples required (6 edible portion, 6 liver, and 3 fat samples). Sample collection and data interpretation would be coordinated by the staff hydrologist. A

Last Update: 03/23/95  
Initial Proposal: 1994

Project Statement

BUFF-N-114.000  
Priority: 999  
Page Num: 0177

report of the findings would be prepared and significance of toxin concentrations would be determined based on EPA criteria. Information would be used to inform the public on the status of toxins in Buffalo River fish.

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	17.00	0.10
Total:			=====	=====
			17.00	0.10

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 App.7.4 E(2)

Last Update: 03/23/95  
Initial Proposal: 1994

## Project Statement

BUFF-N-115.000  
Priority: 16  
Page Num: 0178

Title : SURVEY ALGAL (PERIPHYTON) BIOMASS

Funding Status: Funded: 0.00 Unfunded: 50.00

Servicewide Issues : N20 (BASELINE DATA)  
N11 (WATER QUAL-EXT)

Cultural Resource Type:

N-RMAP Program codes : Q00 (Water Resources Management)  
Q01 (Water Resources Management)

10-238 Package Number :

## Problem Statement

Periphyton has been shown to undergo dramatic growth responses from the input of organic pollution in stream systems. Algal blooms in the Buffalo River can be significant and show both spatial and temporal fluctuations. How this algal biomass production relates to nonpoint source pollution, land-use activities, hydrologic cycles, and nutrient contributions from incoming tributaries is unknown. Additionally, the imbalances caused in the natural functioning of the aquatic ecosystem (i.e. what species benefit and what species are impaired) by excessive periphyton production are unknown. The aesthetic quality of the river is impaired by algal growths and public perception of them is usually negative. Studies relating the biomass production to season, water quality, and tributary inputs in quantitative terms are needed to begin the process of understanding the relationships between the factors that drive algal production and the amount of algae produced.

## Description of Recommended Project or Activity

Over a three year interval, measure algal production using standard techniques above and below tributaries and in areas of the river characterized by algal blooms. Quantify algal biomass and keep a database record of results. Work would be performed in-house by field-level personnel under the supervision of the hydrologist. On the fourth year, the hydrologist would analyze the data, compare findings to water quality data and land-use information, and prepare a report for management describing the findings and making recommendations.

Last Update: 03/23/95  
Initial Proposal: 1994

Project Statement

BUFF-N-115.000  
Priority: 16  
Page Num: 0179

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	25.00	0.10
Year 2:	RES	One-time	25.00	0.10
			=====	
Total:			50.00	0.20

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 7.4 E(2)

Last Update: 01/27/98  
Initial Proposal: 1994

## Project Statement

BUFF-N-116.000  
Priority: 0  
Page Num: 0180

Title : MONITOR RAIN/STORM AGRICULTURAL RUNOFF

Funding Status: Funded: 25.00 Unfunded: 0.00

Servicewide Issues : N20 (BASELINE DATA)  
N11 (WATER QUAL-EXT)

Cultural Resource Type:

N-RMAP Program codes : Q00 (Water Resources Management)  
Q01 (Water Resources Management)

10-238 Package Number :

## Problem Statement

### Introduction

Buffalo National River (BUFF) is a free-flowing stream in northern Arkansas famous for its canoeing, fishing, and other recreational activities. The National Park Service's jurisdictional boundary includes a 132 mile river corridor from near the headwaters to the confluence with the White River. BUFF manages eleven percent of the watershed, sharing ownership with Ozark National Forest (26%), Arkansas Game and Fish Commission (3%) and many private land-owners (60%). A myriad of land use activities, mostly related to agriculture, occur in the watershed including wilderness, logging, beef, dairy, swine, and poultry operations.

The middle section of the Buffalo River (Figure 1) has been designated by the Arkansas Department of Pollution Control and Ecology as impaired for water-based recreational uses due to agricultural nonpoint source pollution (ADPCE, 1992). Because of a combination of land ownership and physiographic factors, this area is being cleared and converted to pasture at the highest rate of any area within the watershed (Stephenson and Mott, 1992). Additionally, the widespread failure of area farmers to apply for and comply with confined animal permits and regulations resulted in the issuance of a two year moratorium on the issuing of any new permits in the watershed.

Intensive agricultural use, agricultural development, and poor land use management at existing operations, all occurring over a matrix of karstic geology, has resulted in the highest level of degradation in the middle section of the river (Mott, 1991). Because of the nature of the pollution source (agricultural nonpoint), highest levels of bacteria, nutrients, turbidity and sediment are associated with rain events when pasture surfaces and holding lagoons are flushed or overflow into surface and subsurface drainage networks. In order to understand the human health risk, ecological implications, and relationship of parameter concentrations to well defined land use patterns in the area, it is necessary to monitor the rain event associated water



Last Update: 01/27/98  
Initial Proposal: 1994

## Project Statement

BUFF-N-116.000  
Priority: 0  
Page Num: 0181

chemistry of three tributaries and the river main-stem in the affected area.

## Resource Significance

The enabling legislation (P.L. 92-237) for BUFF states the park was created "for the purposes of conserving and interpreting an area containing unique scenic and scientific features, and preserving as a free-flowing stream an important segment of the Buffalo River...". The Resource Management Plan (NPS, 1992) approved for BUFF lists water quality as the "Number One natural resource priority for Buffalo National River. Water is the park's major resource and water-based recreation is the major recreational activity. Protection of water quality therefore must be ensured since any type of contamination could lead to serious degradation of not only the water itself, but also have a deleterious effect on other park resources, i.e., wildlife, fisheries and cave life as well as visitor and employee health". In 1992, over one million visitors came to BUFF with the main recreational activities being canoeing and swimming. Within the project area, the National Park Service has recently completed an eleven million dollar visitor facility at Tyler Bend. Six concessions operations in the middle district gross over \$800,000 per year while the surrounding Searcy County receives nearly 2 million in park related tourism dollars each year. Declining water quality is creating increased tensions between environmental organizations and agricultural interests.

The State of Arkansas has recognized the significant value of the Buffalo River through Extraordinary National Resource Waters and Natural and Scenic Waterway designations. Streams with these designations are protected by an antidegradation policy and are to be maintained through a variety of means; including protection of instream habitat and land management protective of the watershed.

## Severity of Resource Threat

Agricultural development and associated land clearing, nonpoint source pollution, gravel loading, stream-bank erosion, alteration of hydrologic runoff and base flow characteristics, and habitat destruction are cumulative impacts which represent the most significant threat to the integrity of BUFF as a natural freeflowing stream. Because of the identified threat to aquatic resources from external sources, BUFF initiated a water quality monitoring program in 1985 which routinely monitors nine river sites, twenty tributaries, and three springs. Results from this program show the project area of the river to have the highest nutrient levels and tributaries within this reach contain anomalous high levels of bacteria, nutrients, and turbidity as compared to monitoring stations outside the project area (Mott, 1991).

Water quality monitoring by ADPCE has also detected water quality degradation in this portion of the watershed and resulted in the

## Project Statement

Last Update: 01/27/98  
Initial Proposal: 1994

BUFF-N-116.000  
Priority: 0  
Page Num: 0182

designation of 6.9 miles of the Buffalo River and 23.9 miles of Bear Creek as impaired by nonpoint source pollution. In a similar action, the Arkansas Soil and Water Conservation Commission listed this portion of the Buffalo River and Richland Creek as threatened in their Nonpoint Source Pollution Assessment Report which is prepared pursuant to the Clean Water Act. BUFF water quality monitoring has measured high flow bacterial concentrations of 3940 col/100 mL in one of the project area tributaries.

In response to these listings and NPS concerns, the USDA Soil Conservation Service submitted an application for federal assistance under P.L. 83-566 to initiate a Watershed Protection Water Quality Project. The application includes six tributary watersheds draining into the Buffalo River as shown in Figure 1. The SCS has completed a Buffalo River tributaries Preauthorization Report which has been approved at the Washington level and a full scale planning and mitigation report is presently being developed. A GIS analysis of land clearing in relation to slope in a portion of Searcy County within the watershed showed a 126 percent increase in pasture from 1965 to 1983. Additionally, because relatively flat areas were cleared first, conversion of forest land to pasture on slopes exceeding 14 degrees increased by 214 percent during this same time period (Stephenson and Mott, 1992). Loss of soil and migration of gravel from the cherty, highly erodible hillsides, is speculated to be causing water quality degradation and undesirable changes in stream geomorphology (Jacobson et. al., 1990).

In October, 1992, ADPCE imposed a moratorium on the issuance of water permits in the Buffalo River watershed. In a press release, ADPCE Director Randall Mathis stated "because of the number of permitted confined animal operations currently in the watershed, the highly sensitive river environment could be put at risk by the failure of hog and dairy farmers to comply with the terms of their permits". ADPCE is also initiating intensive water quality studies to determine the current level of off-site migration of contaminants from confined animal operations and will use this information to modify permits and design educational programs for area farmers.

### Contribution to Understanding Park Ecosystem:

A similar study concerning high flow loading of nonpoint source pollution in the upper watershed was completed by Mott, 1991. This study of the effects of pasture runoff on water chemistry in Boxley Valley fulfilled a critical need recognized by park managers for information gathering in association with agricultural activities in this private use section of the river.

Conclusions of this study showed maximum fecal coliform concentrations in the river were three times higher below the pasture area as compared to above the pastures and maximum downstream concentrations were 1500 col/100 mL. Mass loading calculations determined that the river transports an equivalent amount of fecal bacteria in one storm event as compared to 150

## Project Statement

Last Update: 01/27/98  
Initial Proposal: 1994

BUFF-N-116.000  
Priority: 0  
Page Num: 0183

base-flow days. Nutrient and turbidity also increased below the pasture area and loading calculations were again high. As a result of this and other water quality studies it has been determined that establishment of filter strips and restoration of riparian buffers are critical needs in this NPS administered private use area. Of the six miles of river corridor in Boxley Valley, easement changes and fencing has removed cattle from three miles of river and riparian areas and efforts continue to establish riparian corridors in the remainder of the valley.

This study will compare water quality conditions in the project area to storm flow water chemistry determined from the wilderness area in the previous study to determine the level of departure from background conditions. Also, the SCS is very interested in the information as it relates to previously defined land use characteristics mapped in the tributary watersheds of the study area. Mass loading calculations will be used to determine relative contributions to the river from each tributary and develop correlation models relating agricultural land use concentrations with parameter loads will be developed. This information will be used to set priorities for their watershed protection alternatives. Additionally, BUFF is working with the University of Central Arkansas to conduct macroinvertebrate community structure analyses on the three tributaries to be studied in this project. Correlations could then be developed between existing water quality monitoring data, storm-flow data, and the biological health indices determined from the aquatic insect studies. Results could then be used to qualitatively predict impacts to aquatic organisms in other areas of the watershed based on existing water quality data only.

BUFF does not presently receive I&M funding and is not scheduled to receive funding for this information in the next three years.

Status of Available Information on the Problem

Routine water quality monitoring has

## Description of Recommended Project or Activity

### Problem Resolution

Collection of storm-flow water quality information will be used in decisions directly effecting the implementation of the SCS Watershed Protection Program which will provide a minimum of two million dollars for cost share water quality enhancement efforts in the project watershed (the State of Arkansas can approve projects up to two million dollars without needing approval from Washington). The information will also be used to define the present level of visitor and employee health risks associated with increased bacterial concentrations in the river and tributaries.

Project Statement

Last Update: 01/27/98  
Initial Proposal: 1994

BUFF-N-116.000  
Priority: 0  
Page Num: 0184

Results will also be used to determine the mass quantities of nutrients and total suspended solids moving into the tributaries and river main-stem during major storm events. Increased loading of nutrients, especially when associated with sediments deposited in the river, can result in nuisance algal blooms and changes in aquatic ecology due to increased primary productivity. increased sediment loads are detrimental to aquatic life forms and their reproduction and will also provide an indirect indication of the level of erosion and gravel transport associated with the various tributary watersheds.

All this information is needed to assist the ADPCE in their efforts to justify the moratorium and place stricter standards on permitted operations within the watershed. Both of these efforts are continuously being challenged by powerful agricultural lobbyist working through the State's legislative system. The information will also be used in ongoing educational and interpretive programs such as the Water Education Team program in place in three schools within the watershed.

Impact:

Results of this study will show directly the impacts of external activities on park aquatic resources. Nonpoint pollution is difficult to quantify because it is predominantly rain event driven. Parks in similar hydrologic settings, especially those that have some existing water quality and land use information, will be able to extrapolate effects of migrating nonpoint source parameters during high flows based on the published results of this study. Additionally, the interaction of this information with the ongoing planning of the SCS watershed protection program will serve as a model for similar watershed protection programs throughout the nation.

Feasibility (objectives and methodology):

The objectives of this storm-flow water quality monitoring study are to:

- 1.) Define the water chemistry as it relates to flow for three tributaries (Bear, Calf, and Tomahawk Creeks) and one main-stem location (at Highway 65 access) of the Buffalo River. Samples will be collected throughout the rising and falling portions of the hydrograph for three rain events occurring over a two year period. The objective of repeat sampling will be to determine the effect of seasons, rainfall intensity/duration, and other factors on water chemistry.
- 2.) Use mass loading calculation to determine the relative contribution from each of the tributaries and compare this to the total load in the river.
- 3.) Correlate both storm and base-flow water chemistry data to land use information for each of the tributaries.

Project Statement

Last Update: 01/27/98  
Initial Proposal: 1994

BUFF-N-116.000  
Priority: 0  
Page Num: 0185

- 4.) Compare peak concentrations and mass loads to background storm-flow water quality conditions determined previously from a wilderness area of the watershed.
- 5.) Correlate both storm and base-flow water quality conditions to results of macroinvertebrate community structure analyses conducted at these same sampling stations. Quantify nonpoint source water quality degradation in this area of the watershed to be used by the State regulatory agency in their ongoing efforts to mitigate the effects of permitted confined animal rearing operations in the watershed.
- 7.) Collect necessary water quality data to be used by park management in determining the level of impacts currently affecting the park from external sources and to provide a database to which future water quality conditions can be compared (such as determining the effectiveness of the SCS watershed improvement project).
- 8.) Use bacterial concentration information to make legitimate estimates of the degree of visitor and employee health threats associated with the nonpoint source influxes.

The methodology required to initiate this study involves numerous agencies and academic institutions; most of which are already in place. This project makes use of an existing network of projects and programs and a combination of factors not likely to occur again which enable it to be completed and provide a vast amount of high quality data at a very reasonable cost to the NPS. The breakdown of activities follows:

- 1.) Monitor storm-flow in tributaries: Parameters collected will be temperature, conductivity, turbidity, pH, dissolved oxygen, fecal coliform bacteria, total Kjeldahl nitrogen, nitrate+nitrite nitrogen, ammonium, total phosphate, orthophosphate, chloride, sulfate, total suspended solids and discharge. The storm flow data collection will be conducted by BUFF middle district rangers and resource management staff and by a graduate student from the University of Arkansas provided in cooperation with the Arkansas Water Resources Research Center. Portable meters will be used to measure field parameters; bacteria and turbidity will be analyzed in the BUFF lab; all other parameters will be analyzed at the ADPCE lab in Little Rock.
- 2.) Monitor storm-flow in river main-stem: The USGS presently has two fixed sites located on the Buffalo River in conjunction with their National Water Quality Assessment Program. One of these sites is at the Highway 65 access within the project area. The USGS will collect the storm-flow data for the river main-stem and analyze for the same parameters (plus some additional) as in the tributaries.
- 3.) Assemble land use information - The SCS has already completed inventories of several important land use and

	Project Statement	BUFF-N-116.000
Last Update: 01/27/98		Priority: 0
Initial Proposal: 1994		Page Num: 0186

physiographic factors mentioned previously and has digitized this information into a GIS system. The SCS would welcome the chance to compare the mass loading and peak concentration results with this GIS database.

4.) Conduct macroinvertebrate community structure analyses: Dr. Mathis from the University of Central Arkansas is already in the process of collecting macroinvertebrate information for the studyh tributaries. The USGS NAWQA program is collected benthic macroinvertebrate data from the river main-stem site along with physical habitat, periphyton, and fish.

5.) Monitor base flow water quality: BUFF's hydrologist and staff have designed and carry out a routine water quality monitoring program which has collected and continues to collect base-flow water quality data for each of the study sites.

6.) Assemble data, perform correlations, and generate thesis report: A graduate student from the University of Arkansas, working under the direction of BUFF's hydrologist and the director of the Arkansas Water Resources Research Center, will participate in data collection, management, and analysis as part of her/his thesis requirements.

All data collection and analysis will be conducted in accordance with EPA guidelines and/or Standard Methods. BUFF will provide the bulk of the logistical support and will let the various actors know when conditions are appropriate for storm-flow sampling. BUFF's Flood Warning System which has 19 rain gauges and four stream level transducers reporting real-time data to two base station computers accessible by modem from any other computer. This environmental data collection system will provide the lead-time needed to mobilize field crews to initiate sampling.

#### Cost Effectiveness:

The project will require two years to complete and identified costs are for the duration of the project:

SOURCE	ITEM	COST
WRD.....	Graduate Student Support.....	25,000
BUFF....	Field Personnel, Vehicles, Lab Supplies, use of meters, Hydrologist Salary.....	20,000
AWRRC..	Graduate Student Support (computers, office space, directors salary)....	10,000
SCS....	Integrate study with GIS databases.....	10,000
USGS...	Sample and Analyze Main-stem Site.....	30,000
ADPCE..	Laboratory Analysis of Tributary Samples	

Project Statement	BUFF-N-116.000
Last Update: 01/27/98	Priority: 0
Initial Proposal: 1994	Page Num: 0187

(approximately 216 samples).....15,000

UCA...Macroinvertebrate Community Structure.....20,000

TOTAL.....130,000

Through this proposal, BUFF is asking support from WRD's Water Quality Program in the amount of \$12,500 per year for two years. The other costs described above are all delineated in other project statements in the BUFF RMP.

#### Acronyms

WRD = Water Resources Division  
BUFF = Buffalo National River  
AWRRC = Arkansas Water Resources Research Center  
SCS = Soil Conservation Service  
USGS = United States Geological Survey  
ADPCE = Arkansas Department of Pollution Control and Ecology  
UCA = University of Central Arkansas

#### References

ADPCE, 1992, Water quality inventory report; 1992: Arkansas Department of Pollution Control and Ecology, Little Rock, AR.

Jacobson, R.B., A.J. Miller, and S. Gough, 1990. Effects of land use, climate, and large floods on gravel aggradation, instability, and fisheries in Missouri Ozark streams [abstract]: EOS, v.71, p.1322.

Mott, D.N., 1991, Effects of pasture runoff on water chemistry, Buffalo National River, USA: in Sediment and stream water quality in a changing environment: trends and Explanation, IAHS Publ. no. 203, 1991.

Mott, D.N., 1991, Water quality report; 1985-1990: Buffalo National River, Harrison, AR.

National Park Service, 1992, Resource Management Plan: Buffalo National River, Harrison, AR.

Stephenson, T., and D. Mott, 1992, GIS analysis determines erosion Xpotential at Buffalo National River basin: Park Science, Fall 1992, Corvallis, OR.

	Project Statement	BUFF-N-116.000
Last Update: 01/27/98		Priority: 0
Initial Proposal: 1994		Page Num: 0188

BUDGET AND FTEs:

-----FUNDED-----			
Source	Activity	Fund Type	Budget (\$1000s) FTEs
1994:	WATER-RES MON	One-time	12.50 0.00
1995:	WATER-RES MON	One-time	12.50 0.00
		Total:	=====
			25.00 0.00
-----UNFUNDED-----			
	Activity	Fund Type	Budget (\$1000s) FTEs
		Total:	=====
			0.00 0.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 7.4 E(2)



	Project Statement	BUFF-N-120.000
Last Update: 01/27/98		Priority: 1
Initial Proposal: 1994		Page Num: 0189

Title : DETERMINE DEPENDENCE OF AQUATIC RESOURCES ON FLOWS

Funding Status: Funded: 0.00 Unfunded: 90.00

Servicewide Issues : N20 (BASELINE DATA)  
N13 (WATER RIGHTS)  
Cultural Resource Type:  
N-RMAP Program codes : Q00 (Water Resources Management)  
Q02 (Water Rights Management)

10-238 Package Number :

#### Problem Statement

Several projects designed to impound and/or withdraw water from the Buffalo River have been presented in the past. In 1990, an attempt by a nearby municipality to divert one million gallons per day (gpd) from the river and return 700,000 gpd of waste water was initiated. Based on a stream flow analysis derived from river discharge data, it was determined that this direct diversion would exceed the dependable flow and the permit was denied. Because water supply is purported to be a major factor influencing economic growth in area communities, other means of securing water are currently being pursued.

The latest proposal calls for an impoundment on Bear Creek, one of the Buffalo River's major tributaries comprising over 10 per cent of the watershed, which could alter flow regimes in both streams. Water contributed from Bear Creek, both in the form of base flow and storm flow, is important in maintaining the free-flowing nature of the Buffalo River, a congressionally mandated priority. In the Wild and Scenic Rivers Act, congress defined free-flowing as "existing or flowing in natural condition without impoundment, diversion, straightening, rip-rapping, or other modifications of the waterway.

Very little specific information is known about the dependence of water-related resource attributes on existing flows. Generally, reservoir construction has been shown to decrease inputs of organic detritus and organisms from headwaters sources, change downstream water temperatures, and alter sediment transport, stream channel, and riparian processes. Flow and ecological data need to be collected on Bear Creek and the Buffalo River to help predict acute, chronic, and cumulative impacts of tributary reservoir construction on tributary reaches within the park and the Buffalo River. These data, in addition to natural resource studies, will assist the NPS in developing an understanding of the dependence of water-related resource attributes on existing flows.

### Description of Recommended Project or Activity

Fund the installation and operation of a U.S. Geological Survey (USGS) streamflow gauging station on Bear Creek for at least three years. Correlate streamflows at Bear Creek with nearby gauges on the Buffalo River to determine the relationship between the two streams. Develop hydrologic models to evaluate the effects of proposed water development projects on existing flow regimes and water-related resource attributes. Assistance in developing flow models will be provided by the Water Resources Division. Data collection and management would be the responsibility of the USGS.

Additionally, important water-related resource attributes would be identified and studies initiated to determine their dependence on existing flow regimes. These studies should be conducted in conjunction with stream-flow gauging on Bear Creek and the Buffalo River, and should consider resource attributes such as sediment transport, fisheries, aquatic insects, riparian vegetation, and recreation and aesthetics. Project oversight will be provided by the Water Resources Division. Data collection and/or contract administration would be provided by BUFF's hydrologist.

### BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	30.00	0.10
Year 2:	RES	One-time	30.00	0.10
Year 3:	RES	One-time	30.00	0.10
Total:			=====	
			90.00	0.30

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Project Statement  
Last Update: 01/27/98  
Initial Proposal: 1994

BUFF-N-120.000  
Priority: 1  
Page Num: 0191

Explanation: 516 DM6 7.4 E(2)

	Project Statement	BUFF-N-130.000
Last Update: 01/29/98		Priority: 999
Initial Proposal: 1994		Page Num: 0192

Title : MAINTAIN FLOOD-WARNING SYSTEM

Funding Status: Funded: 25.00 Unfunded: 45.00

Servicewide Issues : N20 (BASELINE DATA)  
N12 (WATER FLOW)  
Cultural Resource Type:  
N-RMAP Program codes : Q00 (Water Resources Management)  
Q01 (Water Resources Management)

10-238 Package Number :

#### Problem Statement

Buffalo National River needs to establish a source of base funding which would allow maintenance and repair of the Flood-Warning System (FWS) and provide necessary visitor protection and environmental data. The system was installed at a cost of \$200,000 in 1983 as an early warning device after a major flood destroyed many Park facilities (most of the Park's developed campgrounds are within the twenty year floodplain). The Superintendent's justification for the system stated that 1) the area is very susceptible to flash flooding and high water, 2) there is a potential threat to life and property, 3) the public expects us to patrol the river and protect its users, and 4) concessionaires provide rental canoes for use on the river and they need early notification of high water to protect their equipment and customers. Additionally, stream discharge measurements are recorded by this system at four locations along the River which provides valuable information. The minimum flow requirement data provides protection for recreational opportunities, fisheries, and wildlife. A request to withdraw water from the River was denied based on flow. A proposal to impound a major tributary to the River has yet to be resolved. The FWS is currently operated by the hydrologist, but no account exists to provide needed funding for repairs and system upgrades. System maintenance is performed at the minimum level possible which limits the applicability and readiness of the system. Limited funding is currently supplied partly from the Maintenance Division's account and partially from the Chief Ranger.

#### Description of Recommended Project or Activity

Provide a source of funding that the hydrologist could use for proper maintenance of the FWS including repairs, replacement, and training. Additionally, wages covering the service of an electronic mechanic that performs field maintenance on the system would also be covered by this account. The cost required to cover the hydrologist's time in maintaining the system is not

Last Update: 01/29/98  
Initial Proposal: 1994

Project Statement

BUFF-N-130.000  
Priority: 999  
Page Num: 0193

included in this request.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1994:	PKBASE-OT	ADM	Recurring	5.00	0.10
1995:	PKBASE-OT	ADM	Recurring	5.00	0.10
1996:	PKBASE-OT	ADM	Recurring	5.00	0.10
1997:	PKBASE-OT	ADM	Recurring	5.00	0.10
1998:	PKBASE-OT	ADM	Recurring	5.00	0.10
Total:				=====	
				25.00	0.50
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		ADM	Recurring	15.00	0.20
Year 2:		ADM	Recurring	10.00	0.20
Year 3:		ADM	Recurring	10.00	0.20
Year 4:		ADM	Recurring	10.00	0.20
Total:				=====	
				45.00	0.80

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 7.4 E(2)

	Project Statement	BUFF-N-140.000
Last Update: 01/29/98		Priority: 0
Initial Proposal: 1992		Page Num: 0194

Title : MONITOR SURVEYED EROSION SITES

Funding Status: Funded: 35.00 Unfunded: 0.00

Servicewide Issues : N20 (BASELINE DATA)  
 Cultural Resource Type:  
 N-RMAP Program codes : D00 (Disturbed Area Rehabilitation)

10-238 Package Number :

#### Problem Statement

Need to continue monitoring erosion sites along river and tributaries to quantitatively determine amount of soil loss and damage to natural and cultural resources occurring at these locations. Erosion is caused by instability in the river channel and farming too close to the bank. This has resulted in loosely bound sandy and silty floodplain sediments becoming exposed to the erosive forces of the river. Maximum rates of erosion can be as much as 24 feet per year resulting in tons of sediment lost from bottomland fields and increased siltation in the river.

#### Description of Recommended Project or Activity

Continue monitoring erosion sites to determine which sites are eroding the fastest and which sites have stabilized. Monitoring data is important in determining which sites are candidates for cedar tree revetments and in measuring the success of the revetments. Monitoring strategy consists of setting monuments, establishing a reference line tangent to the eroding bank and measuring the distance from the tangent line to the top of the erosion scarp. Measurements are recorded on a field sheet and important changes are also noted. The height and length of the bank are measured and the site is photographed from established photography points. Currently, there are 25 erosion sites monitored once each year by SCAs under the direction of the biological technician.

#### BUDGET AND FTEs:

		-----FUNDED-----			
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1992:	PKBASE-NR	MON	Recurring	5.00	0.20
1993:	PKBASE-NR	MON	Recurring	5.00	0.20

Last Update: 01/29/98  
 Initial Proposal: 1992

Project Statement

BUFF-N-140.000  
 Priority: 0  
 Page Num: 0195

1994:	PKBASE-NR MON	Recurring	5.00	0.20
1995:	PKBASE-NR MON	Recurring	5.00	0.20
1996:	PKBASE-NR MON	Recurring	5.00	0.20
1997:	PKBASE-NR MON	Recurring	5.00	0.20
1998:	PKBASE-NR MON	Recurring	5.00	0.20

Total:	=====	35.00	1.40
--------	-------	-------	------

-----UNFUNDED-----

Activity	Fund Type	Budget (\$1000s)	FTEs
Total:		=====	=====
		0.00	0.00

(Optional) Alternative Actions/Solutions and Impacts  
 (No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 7.4 E(2)

Last Update: 01/27/98  
Initial Proposal: 1997

Project Statement

BUFF-N-141.000  
Priority: 999  
Page Num: 0196

Title : ASSESSMENT & MONITORING OF STREAM MORPHOLOGY

Funding Status: Funded: 0.00 Unfunded: 280.00

Servicewide Issues : N11 (WATER QUAL-EXT)  
N12 (WATER FLOW)

Cultural Resource Type:

N-RMAP Program codes : Q00 (Water Resources Management)  
Q01 (Water Resources Management)

10-238 Package Number :

Problem Statement

Regional geomorphic studies conducted by the United States Geological Survey (which included three study reaches on the Buffalo River) concluded "During the last 100 years, stream channels in the Ozarks have become wider and shallower and deep-water fish habitat has been lost...Historical and stratigraphic data show that after 1830, Ozarks streams responded to land-use changes by depositing more gravel and less muddy sediment, compared to pre-settlement conditions." Land use statistics in the Buffalo River watershed indicate widespread conversion of forest to pasture with concomitant increases in cattle populations, cattle grazing densities, and confined animal operations. This trend has the potential to further increase the documented historical stream channel disturbance by increasing storm water runoff and sediment supply.

Stream channel processes maintain physical habitats used by the vast array of aquatic organisms at BUFF. Physical habitat is the primary building block upon which ecosystems evolve and are maintained. Therefore, changed physical habitat attributes are reflected in the ecological communities they support. As Ozark streams become wider and shallower, with more gravel and less stream side vegetation, stream communities become less diverse, trending toward those organisms that are more tolerant to the post-alteration conditions.

Specific studies linking land use to changes in stream ecology will be used by park and area managers to implement measures intended to offset the negative aspects related to deforestation and development.



Last Update: 01/27/98  
Initial Proposal: 1997

Project Statement

BUFF-N-141.000  
Priority: 999  
Page Num: 0197

Description of Recommended Project or Activity

A multidisciplinary study should be initiated to determine the correlation between:

- 1.) landuse and channel geomorphic properties
- 2.) geomorphic properties and physical habitats
- 3.) physical habitats and community structures

Landuse studies have already been conducted or are ongoing for Buffalo River's major tributaries. These land use/land cover studies span 30 years.

Geomorphic properties to be measured include: substrate particle size distribution, imbeddedness, bank-full width, bank-full depth, width/depth ratio, gradient, sinuosity, bank-full area, entrenchment ratio, and floodprone area.

Physical habitat attributes include: canopy coverage, bank stability, habitat type percent by reach, and flow.

Aquatic ecology investigations are already underway including detailed macroinvertebrate community structure and function analyses, and Index of Biotic Integrity rankings for fish communities. These studies will be expanded to the remaining tributaries employed in this study.

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	70.00	0.80
Year 2:	RES	One-time	70.00	0.80
Year 3:	RES	One-time	70.00	0.80
Year 4:	RES	One-time	70.00	0.80
Total:			=====	=====
			280.00	3.20

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

	Project Statement	BUFF-N-141.000
Last Update: 01/27/98		Priority: 999
Initial Proposal: 1997		Page Num: 0198

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

Last Update: 03/23/95  
Initial Proposal: 1995

## Project Statement

BUFF-N-144.000  
Priority: 0  
Page Num: 0199

Title : CHARACTERIZE LANDUSE OF BUFFALO RIVER WATERSHED

Funding Status: Funded: 14.10 Unfunded: 0.00

Servicewide Issues : N06 (LAND USE PRAC)  
N11 (WATER QUAL-EXT)

Cultural Resource Type:  
N-RMAP Program codes : E00 (Environmental Planning and  
Compliance)

10-238 Package Number :

## Problem Statement

### Introduction

Buffalo National River (BUFF) is a 150 mile long free-flowing stream in northern Arkansas famous for its scenic beauty as well as canoeing, fishing, and other recreational opportunities. The National Park Service's jurisdictional boundary includes a continuous 132 mile river corridor from near the headwaters to the confluence with the White River. Eleven percent of the watershed is within BUFF's boundaries. Remaining lands within the watershed are mix of public and private ownership; Ozark National Forest (26%), Arkansas Game and Fish Commission (3%), private (60%). A myriad of land use activities, mostly related to agriculture, occur within the watershed including logging, beef, dairy, swine, and poultry operations.

Current agricultural use, increased forest clearing for pasture, and poor land management practices, occurring on an area of karstic geology, is resulting in degradation of the river (Mott, 1991). Because of the pollution source (agricultural nonpoint), high levels of bacteria, nutrients, turbidity and sediment occur during rain events when pasture surfaces and holding lagoons are flushed or overflow into surface and subsurface drainage networks. In order to understand the ecological implications and the relationship of nutrient and sediment concentrations to land use patterns in the area, GIS based analysis of landuse throughout the Buffalo River watershed is needed to correlate landuse and water quality.

### Resource Significance

The enabling legislation (P.L. 92-237) for BUFF states the National River was established "for the purposes of conserving and interpreting an area containing unique scenic and scientific features, and preserving as a free-flowing stream an important segment of the Buffalo River...". The BUFF Master Plan (1977) recognizes the river as the "...central element of the whole array of natural and historical features in its setting.". Almost 40 miles of the river flow through designated wilderness areas.

Last Update: 03/23/95  
Initial Proposal: 1995

## Project Statement

BUFF-N-144.000  
Priority: 0  
Page Num: 0200

Endangered gray and Indiana bats forage along the Buffalo River for adult forms of aquatic insects. Fifty to one hundred threatened bald eagles winter along the Buffalo. Resident species which are candidates for listing include the aquatic Ozark Hellbender (C2) and the Nearctic Paduniellan caddisfly.

In 1992, nearly one million people visited BUFF with most recreational use dependent upon clean water; such as canoeing, swimming, and fishing. The State of Arkansas has recognized the significant value of the Buffalo River through Extraordinary National Resource Waters and Natural and Scenic Waterway designations. Streams with these designations are protected by an antidegradation policy and are to be maintained through a variety of means; including protection of instream habitat and protective land management of the watershed.

### Severity of Resource Threat

Agricultural development and associated forest clearing, nonpoint source pollution, gravel loading of stream channels, stream-bank erosion, alteration of hydrologic runoff and base flow characteristics, and habitat destruction are cumulative impacts representing the most significant threat to the integrity of BUFF as a natural free-flowing stream. Because of the identified threats to aquatic resources from external sources, BUFF initiated a water quality monitoring program in 1985. Results show sections of the river with high nutrient, bacteria, turbidity levels to monitoring stations on less disturbed sections (Mott, 1991).

Water quality monitoring by Arkansas Department of Pollution Control and Ecology (ADPCE) has designated 6.9 miles of the Buffalo River and 23.9 miles of Bear Creek as impaired by nonpoint source pollution. Water quality monitoring has measured high flow bacterial concentrations as high as 45,000 colonies per 100 ml of sample in one tributary. In response to these listings and NPS concerns, the USDA Soil Conservation Service submitted an application for federal assistance under P.L. 83-566 to initiate a Watershed Protection Water Quality Project.

A GIS analysis of forest clearing in one portion of the watershed showed a 126 percent increase in pasture from 1965 to 1983. Additionally, because suitable lands had already been cleared, conversion of forest land to pasture on slopes exceeding 14 degrees had increased by 214 percent (Stephenson and Mott, 1992).

Loss of soil and migration of gravel from the cherty, highly erodible hillsides, is theorized to cause water the watershed. At this point, information on community structure of the river's macroinvertebrates is missing entirely.

The NPS must establish a clear tie between landuse within the watershed, water quality, habitat alteration, and the health of aquatic biological communities.

Last Update: 03/23/95  
Initial Proposal: 1995

Project Statement

BUFF-N-144.000  
Priority: 0  
Page Num: 0201

Description of Recommended Project or Activity

Objective: Quantify the landuse of the Buffalo National River watershed in 1992 and determine the spatial distribution of the changes in the various landuse categories since 1979.

The tasks to be accomplished in this project can be divided into two groups: landuse characterization of the watershed during 1992, and spatial analyses using other digital databases.

The landuse characteristics during 1992 will be determined from Landsat 5 satellite imagery of Arkansas. Satellite imagery was obtained by the Center for Advanced Spatial Technology (CAST) in 1992 with the assistance of a consortium of state and federal agencies. For the Buffalo River watershed, the digital data will be cut from the state database and stored as separate program.

The digital data for the Buffalo River watershed will be examined for landuse characteristics using techniques developed in the ongoing GAP and WRC projects.

Spatial analyses of the database will be accomplished by examining the 1992 landuse along with other digital databases of the watershed. Maps will be developed of the 1992 landuse, sub-basins and counties. Also, the 1992 landuse will be overlaid on the slopes in the watershed, sub-basins and counties. Tables will be provided of areas within each landuse category in the watershed.

A statistical relationship will be developed of the changes in landuse based upon the 1965, 1974, 1979 and 1992 databases. The physiographic area most impacted by changes in landuse will be determined by masking the cleared areas by physiographic region. The watershed being cleared most rapidly will be determined by masking the watershed with the cleared areas. The correlation between cattle production and land clearing will be determined by the annual population of cattle in the counties. The correlation between population and land clearing will be determined in 10-year increments. The pasture to forest ratio will be determined by county.

BUDGET AND FTEs:

		-----FUNDED-----			
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	UNIV-COLL	RES	One-time	10.00	0.00
	NRPP	RES	One-time	4.10	0.00
Subtotal:				14.10	0.00
Total:				14.10	0.00

Project Statement  
Last Update: 03/23/95  
Initial Proposal: 1995

BUFF-N-144.000  
Priority: 0  
Page Num: 0202

-----UNFUNDED-----

Activity	Fund Type	Budget (\$1000s)	FTEs
		=====	=====
Total:		0.00	0.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

Project Statement  
Last Update: 02/28/97  
Initial Proposal: 1994

BUFF-N-160.000  
Priority: 0  
Page Num: 0203

Title : KARST HYDROLOGY; INVENTORY AND DELINEATION

Funding Status: Funded: 62.40 Unfunded: 0.00

Servicewide Issues : N20 (BASELINE DATA)  
N11 (WATER QUAL-EXT)  
Cultural Resource Type:  
N-RMAP Program codes : Q00 (Water Resources Management)  
Q01 (Water Resources Management)

10-238 Package Number :

#### Problem Statement

Buffalo National River (BUFF) is located in Northwest Arkansas and is visited by over one million people each year who take part in hiking, canoeing, caving, and other recreational activities. The Buffalo River is the primary resource of this 95,000 acre park and State and Federal laws require preservation of the river's water quality and ecology. Other than during periods of precipitation-generated runoff, water flowing to the Buffalo River is supplied by groundwater recharge.

Groundwater flow to the river originates primarily from the karstic aquifers within the Springfield Plateau. The largest spring and cave systems within the park are associated with the 400 to 450 feet thick Mississippian aged limestone formations comprising this plateau. Fitton Cave, the longest cave in Arkansas, is located within this strata and has over seven miles of mapped passages. The protection of Fitton Cave is required by the park's enabling legislation, but a comprehensive karst inventory and recharge delineation has never been performed for the cave's streams or associated springs.

Although Fitton Cave's hydrology has not been intensively studied, surface streams in the vicinity of the cave have been monitored routinely as part of BUFF's Water Quality Monitoring Program and in association with ongoing aquatic macroinvertebrate investigations. Mill Creek is also within the proposed project area, and has been identified as one of the most impacted tributaries to the Buffalo River.

Macroinvertebrate community structure and function analyses placed Mill Creek in the "substantially impacted" category. Further investigations showed the springs at the head of Mill Creek were the dominant inputs of the pollution loads. Preliminary dye tracing work confirmed that interbasin transfer of groundwater from agricultural areas to the north is the likely source of these contaminants.

This proposal outlines the need and mechanism whereby karst features (such as sinkholes, caves, solution conduits and

Last Update: 02/28/97  
Initial Proposal: 1994

## Project Statement

BUFF-N-160.000  
Priority: 0  
Page Num: 0204

springs) and groundwater recharge basins will be inventoried and delineated to allow development of a proper hydrogeologic picture of this sensitive groundwater area. Biological inventories are already underway to determine existing community structures and the nature and extent of sensitive or endangered species. This information, combined with ongoing landuse mapping and physical and chemical (physicochemical) water quality monitoring, will provide BUFF with the tools to initiate management actions to protect karst aquifers, their recharge basins, and the streams that feed the Buffalo River.

## Significance of Resource

The enabling legislation (P.L. 92-237) for BUFF states that the National River was established "for the purposes of conserving and interpreting an area containing unique scenic and scientific features, and preserving as a free-flowing stream an important segment of the Buffalo River...". The BUFF Master Plan (1977) recognizes the river as the "...central element of the whole array of natural and historical features in its setting.". The General Management Plan, Statement for Management, Fitton Cave Action Plan, and the Cave Management Plan all state the need for delineating the basin's hydrologic characteristics so that changes can be detected in subsequent monitoring of karst related resources.

In 1993, over one million people visited BUFF, with most recreational use dependent upon clean water. The State of Arkansas has recognized the significant value of the Buffalo River through Extraordinary National Resource Waters and Natural and Scenic Waterway designations. Streams with these designations are protected by an antidegradation policy and are to be maintained through a variety of means; including protection of instream habitat and protective land management within the watershed.

Endangered Gray and Indiana Bats reside in area caves and forage along the Buffalo River and its tributaries for adult forms of aquatic insects. Fifty to one hundred threatened Bald Eagles winter along the Buffalo. Resident candidate species include the aquatic Ozark Hellbender (C2), the Nearctic Paduniellan caddisfly (C2) and Eastern small-footed bat (C2).

## Severity of Resource Threat

Agricultural development and forest clearing with resulting nonpoint source pollution represent the most significant threat to BUFF. NPS water monitoring indicates agricultural sections of the river have higher nutrient, bacteria, and turbidity than sites on less disturbed sections (Mott, 1991). Fecal coliform concentrations as high as 45,000 colonies per 100 ml of sample have been recorded in one tributary. Aquatic macroinvertebrate surveys performed by Mathis (1991) employed community structure analyses and showed "substantial impairment" of ecological assemblages in affected streams.



Last Update: 02/28/97  
Initial Proposal: 1994

Project Statement

BUFF-N-160.000  
Priority: 0  
Page Num: 0205

The Arkansas Department of Pollution Control and Ecology (ADPCE) has designated 6.9 miles of the Buffalo River as impaired by nonpoint source pollution. A cooperative study between ADPCE and BUFF revealed "Mill Creek (shown in Figure 3) is contributing 96% of the nitrate-nitrite load carried by the Buffalo River below their confluence" (Maner and Mott, 1991). In response to concerns over degrading water quality, USDA Natural Resources Conservation Service has submitted an application for federal assistance under P.L. 83-566 to initiate a Watershed Protection Water Quality Enhancement Project within the basin.

A GIS analysis of forest clearing in one portion of the watershed showed a 126 percent increase in pasture from 1965 to 1983. Because less steep lands had already been cleared, conversion of forest land to pasture on slopes exceeding 14 degrees had increased by 214 percent (Stephenson and Mott, 1992). Deforestation can result in deterioration of water quality, sediment loading, and favors increased runoff over infiltration which lowers water tables and decreases base (spring) flow.

Problem Definition and Information Base

Groundwater tracing, conducted by Aley and Aley (1989) for Mitch Hill Spring, revealed that approximately sixty-five percent of the recharge area for this spring lies beyond the perimeter of the surface watershed boundary. Permitting of a proposed landfill to be sited within this area of previously undefined interbasin transfer was denied based on the results of the dye tracing. The study area exhibits a similar karst hydrologic setting as the Mitch Hill Spring example.

Two preliminary dye tracing investigations within the study area confirmed interbasin transfer of groundwater from the Crooked Creek watershed to the Mill Creek watershed. In both cases, dye moved 2.5 miles from injection to recovery point in less than five days and crossed the surface water drainage divide. This rapid groundwater transport can only be accomplished through conduit flow; conduit flow does not allow for filtration of pollutants.

Of the twenty tributaries monitored on a routine basis by BUFF, Mill Creek has the highest average nitrate concentrations and the second highest total phosphate concentration. Maximum fecal coliform concentrations also exceeded state standards for primary contact recreation on several occasions (Mott, 1991). An aquatic ecology study conducted by Mathis (1991) used community composition, functional groups, species richness, and Margalef's, Shannon's and Simpson's Indices to compare macroinvertebrate populations in Mill Creek to those of similar, but more pristine, tributaries. The Mathis study revealed significant differences between these streams and generalized Mill Creek as displaying "relatively low community health".

Last Update: 02/28/97  
Initial Proposal: 1994

## Project Statement

BUFF-N-160.000  
Priority: 0  
Page Num: 0206

### Description of Recommended Project or Activity

#### Feasibility

While karst inventories and dye tracing are time consuming tasks, the methodologies and procedures for accomplishing them are well defined. Generalized karst feature inventories have already been completed by the University of Arkansas and U.S. Geological Survey (USGS) for the two counties containing the project area. Additionally, BUFF previously cooperated with the USGS to begin the process of building a spring inventory database for the study area. A master cooperative agreement is in place between BUFF and the Arkansas Water Resources Center at the University of Arkansas which could be used to conduct the more detailed karst inventory of the study area.

Because of issues relating to the permitting of landfills, impacts to endangered troglobitic species caused by development, and concerns with nonpoint source pollution from the confined animal industry, numerous dye tracing studies have been conducted in this region. As a result, several professional sources are available to BUFF to accomplish the tracing aspect of the study.

Also, BUFF has a hydrologist on staff who will work closely with graduate students, professors, and professionals assigned to this task to insure high quality data collection and data sharing among investigators. The time needed to accomplish these investigations will be two years.

#### Problem Resolution

To preserve the Buffalo River as a free-flowing stream, one of the fundamental issues is to determine recharge areas and transport processes for Park waters. Meaningful analyses of landuse impacts can be conducted only with the attainment of this knowledge. Dye tracing is an effective tool for determining the areal extent of a karst aquifer, even when the boundaries of the aquifer differ from those of surface streams. Only after determining the recharge basin of a karst aquifer is it possible to clearly link land use activities to the health of the aquifer.

In the study area, as in much of northern Arkansas, an increase in confined animal operations has resulted in nutrient and bacteria loading of streams and aquifers. As a result, ADPCE has placed a moratorium (in effect since October, 1992) on the issuance of any new confined animal operation permits within the Buffalo River watershed.

The goals for this project are to:

1. expand the moratorium to areas which contribute groundwater to the Buffalo River, even though they are outside of the surface drainage area;
2. monitor land development in the expanded watershed;
3. integrate this information with ongoing biological and physicochemical investigations;
4. expand our cooperative working efforts with the Natural

Last Update: 02/28/97  
Initial Proposal: 1994

## Project Statement

BUFF-N-160.000  
Priority: 0  
Page Num: 0207

Resources Conservation Service to write Farm Management Plans and implement Best Management Practices within the area of groundwater contribution that account for NPS aquatic resource concerns;

5. use the information to determine the potential impacts of NPS actions upon significant caves; and
6. use ongoing educational programs in area schools to inform students and their parents of the results of this investigation.

## Transferability

The methods, results, conclusions, and recommendations of this study will be published through in-house documents and maps, masters theses, and scientific journals. This information will be provided to the NPS scientific and resource management community and can be used as a model for similar studies that might one day be carried out in one of the other 58 units of the NPS containing caves and karst features.

## Cost Effectiveness and Project Support

The project will require two years to complete and identified costs are for the duration of the project:

Source	Item	Cost
WRD	Conduct karst inventory	25,000
WRD	Perform dye tracing	25,000
UCA	Salary of biological investigator, student wages, equipment, supplies	35,000
BUFF & UCA	Physicochemical monitoring	45,000
BUFF	Hydrologist and Biological Technician Salaries, Vehicles	10,000
ADPCE	lab analysis of spring samples	15,000
U of A	GIS analysis of Land Use	4,000
TOTAL.....		159,000

WRD = Water Resource Division, National Park Service  
BUFF = Buffalo National River  
UCA = University of Central Arkansas  
ADPCE= Arkansas Department of Pollution Control and Ecology  
U of A = University of Arkansas

With this proposal, BUFF is requesting \$25,000 in FY96 and \$25,000 in FY97 to be supplied through the Other Water-Related Issues of the WRD project funding mechanism. The first years funding will be used to initiate the karst inventory with the express purpose of finding sinkholes, caves, fractures, conduits

or losing streams which can be used as dye injection and recovery points. Because a significant amount of this work will take place on private lands, agreements will be worked out with area land owners with the assistance of personnel from the Natural Resources Conservation Service who already have contacts in the area and a working knowledge of obvious karst features.

The second year will focus on the ground water recharge delineation. BUFF will continue to collect water quality data for the area and will assist in the routine aspects of the dye tracing work (such as recovering charcoal packets at regular intervals) which will reduce the direct costs of the tracing investigator. In addition, BUFF, in cooperation with the University of Central Arkansas, has already initiated an intensive biological monitoring program which includes the study area. These other costs associated with the project are provided through in-kind contributions from the park and partners.

#### References

Aley, Thomas, and Aley, Catherine, 1989, Delineation and characterization of the recharge area for Mitch Hill Spring, Buffalo National River, Arkansas: Ozark Underground Laboratory, Protem, Missouri, 132 pp.

N.P.S., 1977, Final master plan: Buffalo National River, Harrison, Arkansas, 59 pp.

Mott, D.N., 1991, Water quality report - 1985 - 1990: Buffalo National River, Harrison, Arkansas, 36 pp.

Mathis, M. L., 1991, Macroinvertebrate community structure at selected sites on the upper Buffalo River: University of Arkansas, Fayetteville, Arkansas, 52 pp.

Maner, M., and Mott, D., 1991, Mill Creek survey: Arkansas Department of Pollution Control and Ecology, Little Rock, Arkansas, 37 pp.

Stephenson, T. R., and Mott, D.N., 1992, GIS analysis of slope and land use in a portion of the Buffalo National River basin: Park Science, Fall, 1992, Corvallis, OR.

#### BUDGET AND FTES:

		-----FUNDED-----			
	Source	Activity	Fund Type	Budget (\$1000s)	FTES
1996:	WATER-RES	MON	One-time	25.00	0.00
	WATER-RES	ADM	One-time	5.00	0.10
	PKBASE-NR	ADM	One-time	1.20	0.05
Subtotal:				31.20	0.15

Last Update: 02/28/97 Initial Proposal: 1994	Project Statement	BUFF-N-160.000 Priority: 0 Page Num: 0209
---	-------------------	---

1997: WATER-RES MON WATER-RES ADM PKBASE-NR ADM	One-time One-time One-time	25.00 5.00 1.20	0.00 0.10 0.05
	Subtotal:	31.20	0.15
		=====	
	Total:	62.40	0.30

-----UNFUNDED-----			
Activity	Fund Type	Budget (\$1000s)	FTEs
		=====	
	Total:	0.00	0.00

(Optional) Alternative Actions/Solutions and Impacts  
 (No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

	Project Statement	BUFF-N-170.000
Last Update: 01/27/98		Priority: 999
Initial Proposal: 1993		Page Num: 0210

Title : DEVELOP WATER RESOURCE EDUCATION PROGRAM

Funding Status: Funded: 42.00 Unfunded: 6.00

Servicewide Issues : N11 (WATER QUAL-EXT)  
N16 (NEAR-PARK DEV)

Cultural Resource Type:

N-RMAP Program codes : I00 (Interp. of Natural Resource Issues)

10-238 Package Number :

#### Problem Statement

While the NPS views the Buffalo River and its preservation in terms of the entire watershed, most residents in the watershed do not. Without the support of the residents, watershed and water quality protection will never be accomplished and the NPS will be unable to achieve its mission. To change attitudes requires knowledge of new perspectives. BUFF resource management staff have worked with approximately 45 high school students from watershed schools each year as members of Arkansas Water Education Teams. These students learn to monitor water quality on streams tributary to the Buffalo River and also receive a healthy dose of park water resource management philosophy in the process.

#### Description of Recommended Project or Activity

BUFF, as one of the sponsoring agencies for project W\*E\*T must provide funding for water monitoring equipment, computer support, and technical assistance. Also, staff time is required to help with troubleshooting, laboratory analysis, and training sessions. Funds need to be directly allocated to support this environmental outreach program.

NPS is sponsoring three schools; Jasper, St. Joe and Marshall.

#### BUDGET AND FTEs:

		-----FUNDED-----			
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1993:	PKBASE-NR	INT	Recurring	3.50	0.10

Last Update: 01/27/98  
Initial Proposal: 1993

# Project Statement

BUFF-N-170.000  
Priority: 999  
Page Num: 0211

1994:	PKBASE-NR INT	Cyclic	3.50	0.10
	NON-PROFI INT	One-time	7.00	0.00
	ST-LOCAL INT	One-time	7.00	0.00
	SVC-OTHER INT	One-time	7.00	0.00
			-----	
	Subtotal:		24.50	0.10
1995:	PKBASE-NR INT	Recurring	3.50	0.10
1996:	PKBASE-NR INT	Recurring	3.50	0.10
1997:	TEMP\$-NR INT	Recurring	1.00	0.00
	PKBASE-NR INT	Recurring	2.00	0.20
			-----	
	Subtotal:		3.00	0.20
1998:	TEMP\$-NR INT	Recurring	2.00	0.00
	PKBASE-NR INT	Recurring	2.00	0.20
			-----	
	Subtotal:		4.00	0.20
			=====	
	Total:		42.00	0.80

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 3:	INT	Recurring	3.00	0.00
Year 4:	INT	Recurring	3.00	0.00
			=====	
	Total:		6.00	0.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.11

Project Statement  
Last Update: 01/15/98  
Initial Proposal: 1994

BUFF-N-210.000  
Priority: 14  
Page Num: 0212

Title : INVENTORY ENDANGERED/RARE PLANT SPECIES

Funding Status: Funded: 0.00 Unfunded: 100.00

Servicewide Issues : N03 (T&E PLANTS)  
N20 (BASELINE DATA)  
Cultural Resource Type:  
N-RMAP Program codes : V00 (Vegetation Management)  
V03 (Threatened & Endangered Plant  
Management)

10-238 Package Number :

#### Problem Statement

The status and distribution of plant species currently being reviewed by the U.S. Fish and Wildlife Service for inclusion on the endangered species list as well as those species determined by the state Natural Heritage Program to be of special concern is very poorly documented on the Buffalo National River. The only information available on the status of these thirty five species is from a limited number of localized surveys conducted on sites considered for development and a record of element occurrences from the state Natural Heritage Program. In terms of the draft guidelines for inventory and monitoring, the current situation only barely meets the criteria for the minimal Level of Effort I. NPS policy requires that the agency identify all state and locally listed threatened, endangered, rare, declining, sensitive, or candidate species that are native to or present in parks and map their distribution within the park. At BUFF action toward this goal has been extremely limited.

Recent grants from Canon USA and the National Park Foundation provided a limited survey of rare plant of some seeps and springs. Forty-two populations of plant species of concern have been identified.

#### Description of Recommended Project or Activity

Conduct a survey for the species currently being reviewed for listing under the provisions of the Endangered Species Act as well as those considered by the state Natural Heritage Program as being of special concern. The survey would concentrate on those habitat types which have been shown to be most likely to support the species. Because this survey would require specialized skills it would have to be contracted through an organization or individual with experience in this area. All plant locations would be documented using procedures developed by The Nature Conservancy's Heritage Program and all data would be provided to



Last Update: 01/15/98  
Initial Proposal: 1994

Project Statement

BUFF-N-210.000  
Priority: 14  
Page Num: 0213

the state Natural Heritage Program.

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	25.00	0.00
Year 2:	RES	One-time	25.00	0.00
Year 3:	RES	One-time	25.00	0.00
Year 4:	RES	One-time	25.00	0.00
Total:			=====	=====
			100.00	0.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 App. 2, 1.6

Project Statement  
Last Update: 01/29/98  
Initial Proposal: 1992

BUFF-N-220.000  
Priority: 0  
Page Num: 0214

Title : MONITORING ENDANGERED SPECIES; BATS

Funding Status: Funded: 40.50 Unfunded: 0.00

Servicewide Issues : N02 (T&E ANIMAL)  
Cultural Resource Type:  
N-RMAP Program codes : W00 (Wildlife Management)  
W03 (Threatened & Endangered Animal  
Management)

10-238 Package Number :

#### Problem Statement

Three species of bats found at Buffalo National River are listed as endangered by the U.S. Fish & Wildlife Service. These species, the Indiana, Gray and Ozark big-eared bats, are afforded legal protection under the Endangered Species Act. The Eastern small-footed bat is currently being reviewed (C2 species) to determine whether it should be listed. NPS policies require that the agency conduct management programs to perpetuate the natural distribution and abundance of threatened, endangered or candidate species.

All of the endangered and candidate bat species at BUFF utilize fourteen different caves for either winter hibernation, summer maternity roosts, or summer bachelor colonies. Six of these caves are either gated or fenced and are closed during the season of use or are signed to warn the public of the closure period. The bats are vulnerable to intentional and unintentional disturbance when people enter the roosting area of the caves. The fences and signs have deterred but not eliminated illegal entry. Cave Mountain Cave and John Eddings Cave in particular are subject to entry during closure periods.

The NPS cooperates with the Arkansas Game and Fish Commission and U.S. Fish and Wildlife Service in conducting annual and semiannual counts of bats in the thirteen caves known to be utilized by bats. These counts are carried out in accordance with the recovery plans developed for these species.

Riparian areas are known to be important foraging areas for bats and maintaining forested areas to connect caves with these streams and forested corridors along streams is critical to their survival.

Last Update: 01/29/98  
Initial Proposal: 1992

Project Statement

BUFF-N-220.000  
Priority: 0  
Page Num: 0215

Description of Recommended Project or Activity

The NPS will continue to carry out the provisions of the recovery plans for the Indiana, Gray and Ozark big-eared bats. These actions will include; 1) protection of cave habitats, including closures as needed, 2) protection of foraging habitat, including maintaining a forested riparian corridor along streams, 3) public education efforts, especially in local communities, 4) monitor populations in hibernacula, maternity and bachelor colony caves, and 5) enforcement of closure orders for protected caves.

The NPS will maintain close contact with the AG&FC, USFWS and the recovery teams to receive new research results, recovery plans updates and monitoring procedures.

BUDGET AND FTEs:

		-----FUNDED-----			
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1992:	PKBASE-NR	MON	Recurring	2.00	0.10
	NON-NPS-O	MON	Recurring	2.50	0.00
			Subtotal:	4.50	0.10
1993:	PKBASE-NR	MON	Recurring	2.00	0.10
	NON-NPS-O	MON	Recurring	2.50	0.00
			Subtotal:	4.50	0.10
1994:	PKBASE-NR	MON	Recurring	2.00	0.10
	NON-NPS-O	MON	Recurring	2.50	0.00
			Subtotal:	4.50	0.10
1995:	PKBASE-NR	MON	Recurring	2.00	0.10
	NON-NPS-O	MON	Recurring	2.50	0.00
			Subtotal:	4.50	0.10
1996:	PKBASE-NR	MON	Recurring	2.00	0.10
	NON-NPS-O	MON	Recurring	2.50	0.00
			Subtotal:	4.50	0.10
1997:	PKBASE-NR	MON	Recurring	2.00	0.10
	NON-NPS-O	MON	Recurring	2.50	0.00
			Subtotal:	4.50	0.10

Last Update: 01/29/98  
Initial Proposal: 1992

Project Statement

BUFF-N-220.000  
Priority: 0  
Page Num: 0216

1998:	PKBASE-NR MON	Recurring	2.00	0.10
	NON-NPS-O MON	Recurring	2.50	0.00
		Subtotal:	4.50	0.10
1999:	PKBASE-NR MON	Recurring	2.00	0.10
	NON-NPS-O MON	Recurring	2.50	0.00
		Subtotal:	4.50	0.10
2000:	PKBASE-NR MON	Recurring	2.00	0.10
	NON-NPS-O MON	Recurring	2.50	0.00
		Subtotal:	4.50	0.10
		Total:	40.50	0.90

-----UNFUNDED-----				
Activity	Fund Type	Budget (\$1000s)	FTEs	
Total:		0.00	0.00	

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 App. 2, 1.6

Project Statement  
Last Update: 01/29/98  
Initial Proposal: 1993

BUFF-N-221.000  
Priority: 8  
Page Num: 0217

Title : CONSTRUCT BAT GATES ON RUSH MINE OPENINGS

Funding Status: Funded: 41.00 Unfunded: 801.00

Servicewide Issues : N02 (T&E ANIMAL)  
N10 (MINRL/GEOTHERM)  
Cultural Resource Type:  
N-RMAP Program codes : W00 (Wildlife Management)  
W03 (Threatened & Endangered Animal  
Management)

10-238 Package Number :

#### Problem Statement

Numerous health and safety hazards are associated with abandoned mine openings located in the Rush Historic District of Buffalo National River. An estimated 30,000 people visit the Rush area every year. The river access area at Rush is one of the most heavily used on the river. River access, campgrounds, and trails are all located a short distance from 67 mine openings.

Abandoned mine site present many hazards to the public and NPS staff. Hazards include falls into vertical shafts, exposure to toxic gases, and falling rock or roof collapse. Some of the mines are particularly unstable at the openings where loose unstable rock lies just above over-hanging walls.

The ruins at Rush represent a significant industry that was once active in this part of the Ozarks. At the peak of the mining period Rush had a population of several thousand with 10 mining companies working its narrow confines. In 1987, a total of 1300 acres, in and around Rush, was listed on the National Register as a Historic District.

There is a close association between bats and abandoned mines. Bats use abandoned mine sites for hibernation, maternity roosts, and day and night roosts. The federally listed endangered gray bat (*Myotis grisescens*) has been documented in several of the mines and other mines are known to include suitable gray bat habitat.

#### Description of Recommended Project or Activity

During 1993 an Environmental Assessment was completed for closure of fifty of the sixty-seven openings. Five gates were completed by 1995 within the Monte Cristo complex. A total of \$33,000 was spent on this phase.

Last Update: 01/29/98  
Initial Proposal: 1993

Project Statement

BUFF-N-221.000  
Priority: 8  
Page Num: 0218

The NPS utilizes a combination of closure methods to correct or mitigate health and safety hazards associated with the 67 abandoned mines while providing protection for bats and cultural resources.

Closure methods include installing conventional steel gates; installing steel bat-gates on opening that have known or suitable bat habitat; permanent closures by back-filling or blasting; and construction of masonry or concrete walls. Bat gates provide for bat egress and ingress, air flow, vandalism resistance, and low-visual impact. Gates will include locking doors to allow future access for monitoring purposes.

The proposed action would include closure of the 61 remaining openings over a three year period.

BUDGET AND FTEs:

		-----FUNDED-----			
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1993:	RG-RM-NAT	MIT	One-time	31.00	0.00
	PKBASE-NR	ADM	One-time	2.50	0.10
				-----	-----
			Subtotal:	33.50	0.10
1994:	RG-RM-NAT	MIT	One-time	7.50	0.00
				=====	=====
			Total:	41.00	0.10
		-----UNFUNDED-----			
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MIT	One-time	267.00	7.00
Year 2:		MIT	One-time	267.00	7.00
Year 3:		MIT	One-time	267.00	7.00
				=====	=====
			Total:	801.00	21.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Project Statement  
Last Update: 01/29/98  
Initial Proposal: 1993

BUFF-N-221.000  
Priority: 8  
Page Num: 0219

Explanation: FONSI signed 1993

Last Update: 01/29/98  
Initial Proposal: 1992

Project Statement

BUFF-N-230.000  
Priority: 0  
Page Num: 0220

Title : MONITORING ENDANGERED SPECIES; BALD EAGLE

Funding Status: Funded: 8.00 Unfunded: 0.00

Servicewide Issues : N02 (T&E ANIMAL)  
Cultural Resource Type:  
N-RMAP Program codes : W00 (Wildlife Management)  
W03 (Threatened & Endangered Animal  
Management)

10-238 Package Number :

Problem Statement

The bald eagle is listed by the U.S. Fish & Wildlife Service as endangered in accordance with the provisions of the Endangered Species Act. It is a common winter resident along the Buffalo River, particularly the lower end of the river below Highway 14. Bald eagles appear as early as October and remain as late as March. In 1991, a mature bald eagle was observed on May 31 near Rush.

Winter populations are documented by individual reports from NPS staff throughout the winter and a one day boat survey in January in conjunction with a state-wide survey by the Arkansas Game & Fish Commission. As many as 35 and as few as four bald eagles have been observed during the boat survey from Hwy. 14 to the White River (33 miles).

Beginning in 1982, the NPS and AG&FC undertook a eagle hacking project near Buffalo Point. This program continued until 1984 and resulted in nine eagles being released. The program was discontinued after 1986 when the AG&FC relocated the hacking program to the Holla Bend National Wildlife Refuge on the Arkansas River.

In recent years bald eagles have begun nesting again in Arkansas. The nearest nearest nest is located on the Spring River approximately sixty miles northeast of the Buffalo River.

The current one day eagle survey has had highly variable results. The small sample size does not provide adequate information to determine whether the eagle population is actually fluctuating on an annual basis or more frequently throughout each winter. A review of NPS staff observations seems to indicate that the one day survey may not always be representative of the wintering population.



Last Update: 01/29/98  
Initial Proposal: 1992

Project Statement

BUFF-N-230.000  
Priority: 0  
Page Num: 0221

Description of Recommended Project or Activity

Bald eagle surveys should be expanded to a minimum of five separate survey days between December 15 and February 15. At a minimum these surveys should cover the Hwy. 14 to White River segment with at least one survey day conducted in conjunction with the AG&FC state-wide survey and covering as much river area as possible. Survey design should determine whether varying water levels or water clarity affect the number of eagles counted.

NPS staff will continue to be encouraged to document all bald eagle sightings on form 10-257 and submit these to the Resource Management Office.

Late season sightings of mature bald eagles will be followed up on to determine whether nesting activities are occurring. USFWS and state endangered species biologists will be notified and consulted if evidence of nesting activity is found.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1992:	PKBASE-NR	MON	Recurring	1.00	0.10
1993:	PKBASE-NR	MON	Recurring	1.00	0.10
1994:	PKBASE-NR	MON	Recurring	1.00	0.10
1995:	PKBASE-NR	MON	Recurring	1.00	0.10
1996:	PKBASE-NR	MON	Recurring	1.00	0.10
1997:	PKBASE-NR	MON	Recurring	1.00	0.10
1998:	PKBASE-NR	MON	Recurring	1.00	0.10
1999:	PKBASE-NR	MON	Recurring	1.00	0.10
Total:				8.00	0.80
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Total:				0.00	0.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Last Update: 01/29/98  
Initial Proposal: 1992

Project Statement

BUFF-N-230.000  
Priority: 0  
Page Num: 0222

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 App. 2, 1.6

Project Statement  
Last Update: 02/03/98  
Initial Proposal: 1995

BUFF-N-235.000  
Priority: 13  
Page Num: 0223

Title : DETERMINE STATUS OF CANDIDATE (ENDANGERED) SPECIES

Funding Status: Funded: 9.00 Unfunded: 45.00

Servicewide Issues : N02 (T&E ANIMAL)  
N17 (BIODIVERSITY)  
Cultural Resource Type:  
N-RMAP Program codes : W00 (Wildlife Management)  
W03 (Threatened & Endangered Animal  
Management)

10-238 Package Number :

### Problem Statement

The construction of Bull Shoals Dam in 1951 and hypolimnetic releases expanded the coldwater habitat on the White River to include the mouth of the Buffalo River. Recent studies by Siegwirth, (1992), documented the effect of cold tail-waters on fish distribution in the Buffalo River. This thermal barrier may have resulted in disjunct populations of two Category species; the Ozark Shiner, *Notropis ozarkcanus*, and the Alligator Snapping Turtle, *Macroclemys temminckii*.

This project represents a unique opportunity to study two species within a single resource area. One of these species has been documented from the Buffalo River but knowledge regarding population biology is limited or non-existent. Impacts to the water quality of the river such as fecal coliform, nutrient loading from confined animal operations, and gravel loading due to land clearing adjacent to park boundaries are potential threats to these disjunct populations. (Mott 1991, U.S.D.A. Soil Conservation Service 1991) The need for a Habitat Assessment for these species is documented within BUFF's approved Resources Management Plan, BUFF-N-419,420, and in the Fisheries Management Plan (draft).

BACKGROUND: Ozark Shiner - According to Dr. Robison, Southern Arkansas University and the Co-author of Fishes of Arkansas, regarding the shiner "virtually nothing is known of its biology or specific ecological requirements. ...Its historic range has been reduced due to numerous impoundments, especially on the White River." Early survey work suggests that the Buffalo River contains the best populations of this species. Dr. Robison is completing a status survey, funded through the State of Arkansas (E6 money), and a limited survey for the Buffalo River through an NPS Challenge Cost Share Grant in the amount of \$2000.00. Both Dr. Robison and Dr. Johnson of the Arkansas Cooperative Fish and Wildlife Research Unit, National Biological Service, University of Arkansas, have expressed interest in developing a Habitat Conservation Assessment Plan for this species.

Project Statement  
Last Update: 02/03/98  
Initial Proposal: 1995

BUFF-N-235.000  
Priority: 13  
Page Num: 0224

Alligator Snapping Turtle - "Alligator snappers are a commercially valuable species and have been exploited as a food source throughout their range." (Johnson 1987, Trauth 1994) Few published records of the turtle exist for Arkansas and severe depletion of species has been noted for several river systems (Prichard 1989). Because the large numbers of turtles observed within the lower Buffalo River by Seigwarth, (1992), and the fact that these populations are relatively free from commercial exploitation, provides an ideal study site for the biology of the species. Both Dr. Trauth and Dr. Johnson have expressed interest in completion of a Habitat Conservation Assessment plan for this species.

#### Description of Recommended Project or Activity

OBJECTIVES: The project is to develop a Habitat Conservation Action Plan for the Buffalo River that includes two species. The plan would be completed in three phases.

Phase one would be a completion of population information including site surveys, habitat observations, and range.

Phase two would be the development of a draft Habitat Conservation Assessment Plan. The plan would be directed toward mitigation of impacts and species recovery. Assumptions would be discussed with other resource managers before finalization.

Phase three would be Conservation Agreements between Buffalo National River, the Arkansas Game and Fish Commission, and the National Biological Service.

#### PROCEDURE/METHODS:

##### Phase One

Ozark Shiner - Twelve to fifteen locations within the river will be sampled. Fishes will be collected in minnow seines of varying length. Photographs will be taken at the various collections sites for habitat assessment. This work will be completed by Dr. Robison in FY 95 under the Challenge Cost Share Grant. Sampling sites which yield high population densities of shiner will be subjected to further habitat analysis jointly by the National Biological Survey, University of Arkansas and Dr. Robison. Habitat evaluation planning techniques will be utilized to compare locations with sites of high and low shiner numbers.

Alligator Snapping Turtle - Survey will be conducted jointly by the National Biological Survey and Dr. Trauth within the lower portion of Buffalo National River. Specimens will be collected using baited hoop nets fished for 24 or 48 hours (after Ferner 1979). Turtles will be weighed, measured, sexed, and tagged with

Last Update: 02/03/98  
Initial Proposal: 1995

Project Statement

BUFF-N-235.000  
Priority: 13  
Page Num: 0225

radios to determine range. Radio-collaring and range determination will be conducted by the NBS for an extended time period (2-5 years).

Phase two

Researchers from the University of Arkansas, Southern Arkansas University, Arkansas State University, National Biological Service, and staff from Buffalo National River, Arkansas Natural Heritage Commission, and the Arkansas Game and Fish Commission will form a cadre to draft the Conservation Assessment.

Phase three

Conservation Agreements will be drafted and sent to responsible agencies/cadre members for signature.

STUDY AREAS: Study areas will consist of the mid and lower reaches of the Buffalo River. Facilities utilized will include the laboratories at the University of Arkansas, Coop Unit (NBS), Arkansas State University, and Southern Arkansas University.

Habitat Conservation Assessment Plan: To be completed for all species by cadre made up of researchers, Buffalo National River staff, and the National Biological Service.

Conservation Agreements: To be completed and signed with National Biological Service, Buffalo National River, Ozark National Forest, Arkansas Game and Fish Commission, and the Arkansas Natural Heritage Commission.

LITERATURE CITED:

Ferner, J.W. 1979. A review of marking techniques for amphibians and reptiles. SSAR Herpetol. Cir. No. 9, 41 pp.

Johnson, T.R. 1987. The amphibians and reptiles of Missouri. Missouri Dept. of Conservation, Jefferson City, Missouri.

Mott, D.N., and Steel, K.F., 1991, Effects of Pasture runoff on water chemistry, Buffalo National River, USA: in Sediment and Stream Water Quality in a changing Environment: Trends and Explanation: IAHS publication # 203, Vienna, Austria, pp. 229-238.

Pritchard, P.C.H. 1989. The alligator snapping turtle: biology and conservation. Milwaukee Public Museum, Milwaukee, Wisconsin. 104 pp.

Siegwarth, Gary L. 1992. "Channel Catfish of the Buffalo River, Arkansas: Population Abundance, Reproductive Output, and Assessment of Stocking Catchable Size Fish". M.S. Thesis, University of Arkansas, Arkansas Cooperative Fish and Wildlife Research Unit, COOP Unit Pub. NO. 11.

Last Update: 02/03/98  
Initial Proposal: 1995

Project Statement

BUFF-N-235.000  
Priority: 13  
Page Num: 0226

U.S.D.A. Soil Conservation Service, 1991, Buffalo Tributaries watershed - Preauthorization Report: Little Rock, Arkansas, 45 pp.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	SVC-OTHER	MON	One-time	2.00	0.00
	UNIV-COLL	MON	One-time	2.00	0.00
	PKBASE-NR	ADM	One-time	0.50	0.01
			Subtotal:	4.50	0.01
1997:	FED-OTHER	RES	One-time	4.50	0.00
			Total:	9.00	0.01
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MON	Recurring	5.00	0.20
		RES	One-time	25.00	0.00
			Subtotal:	30.00	0.20
Year 2:		MON	Recurring	5.00	0.20
Year 3:		MON	Recurring	5.00	0.20
Year 4:		MON	Recurring	5.00	0.20
			Total:	45.00	0.80

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

Last Update: 01/15/98  
Initial Proposal: 1992

## Project Statement

BUFF-N-310.000  
Priority: 0  
Page Num: 0227

Title : MANAGE AGRICULTURAL USE PERMITS

Funding Status: Funded: 78.00 Unfunded: 0.00

Servicewide Issues : N08 (CULT LANDSCAPE)  
Cultural Resource Type: CULL (Cultural Landscape)  
N-RMAP Program codes : V00 (Vegetation Management)  
V07 (Agricultural Use Management)

10-238 Package Number :

## Problem Statement

Both the legislative history and Master Plan (1977) recognize the importance of open fields as an element of the river's pastoral landscape and scenic quality. The Master Plan provided for a "Natural Environment Zone", which includes both a natural and pastoral subzone. Areas within the pastoral subzone are to be perpetuated as open fields through agricultural use or other methods (i.e. prescribed burning). The Master Plan does not specify which areas within the "Natural Environment Zone" are in the natural or pastoral subzones. Two areas, Boxley and Richland valleys, are zoned as a "Private Use Zone" and are predominately agricultural lands which continue in private ownership (subject to easement requirements).

Agricultural activities within the National River involve private operations on scenic easement (1325 acres) and Use & Occupancy (2228 acres) lands and are related almost entirely to cattle grazing on improved pastures. Selected fields (1941 acres) along the river, owned in fee by the NPS, are maintained through special use permits (SUP) or historic leases and in most cases only allow hay cutting. Scenic easement lands will remain in private ownership permanently, however, U&O reservations will be expiring over the next 15 years. SUP are issued for 5 year terms to the highest bidder.

The number of separate parcels (100+) and the complexity of the conditions specific to each make achieving adequate compliance difficult. Cattle trespassing and in some cases overgrazing continue on U&O reservations. Poor conservation practices, and the resulting water quality problems, are difficult to correct because of vague language in some SE and U&O agreements. The result of poor agricultural practices, both past and present, is discussed in project statements N-142 and N-116.

An estimated 60-80% of the pasture land consists of tall fescue grasses. Fescue is a hardy forage, resistant to drought and overgrazing. It does, however, have several well documented downsides. Fescue stands are often infected with a toxic endophyte fungus which causes a wide range of health problems for livestock and wildlife. Its benefits to wildlife are minimal.

Last Update: 01/15/98  
Initial Proposal: 1992

## Project Statement

BUFF-N-310.000  
Priority: 0  
Page Num: 0228

Converting fields to other grasses is expensive and the alternative forages require more careful management. U&O and SUP farmers are reluctant to invest in improvements which are unlikely to pay off before their term expires.

## Description of Recommended Project or Activity

The NPS will implement a policy of riparian forest protection and restoration. A minimum riparian buffer zone of 100 feet will be maintained or restored on both sides of the river. As soon as management authority is achieved, current agricultural field boundaries will be modified to allow riparian forest restoration. This policy will be implemented in conjunction with the actions outlined in the recently completed revetment project and also include marking no mowing zones adjacent to SUP hay fields.

BNR will continue the monitoring and compliance program initiated in 1987 which entails annual onsite inventories of each scenic easement and U&O parcel by District Rangers. Problem areas noted during annual inventories will receive more frequent monitoring throughout the year and corrective actions will be brought to the owner's attention.

Resource Management staff will work cooperatively with private land owners, permittees, lessees and with the Soil Conservation Service, Extension Service and others to develop farm conservation plans and forage conversion projects. Native forage grasses will be encouraged and in general reseeding with fescue will not be permitted. Methods of obtaining cooperative funding of conservation improvement projects and improving economic returns will be explored.

An agricultural use plan will be developed to specify which areas will continue agricultural use after U&O expire and what types of agricultural uses will be permitted.

The Open Fields Management Plan will be revised to include cooperative efforts underway in 1997 with the Arkansas Game and Fish Commission to restore wildlife habitat to many of the these fields. Plans call for an assessment of the open areas within the national river, work with hay leasees to provide buffers and plant native species, and implement a prescribed fire program for targeted fields.



Last Update: 01/15/98  
Initial Proposal: 1992

# Project Statement

BUFF-N-310.000  
Priority: 0  
Page Num: 0229

## BUDGET AND FTEs:

-----FUNDED-----				
	Source	Activity	Fund Type	Budget (\$1000s) FTEs
1992:	PKBASE-NR	ADM	Recurring	5.00 0.10
	PKBASE-NR	PRO	Recurring	5.00 0.20
			Subtotal:	10.00 0.30
1993:	PKBASE-NR	ADM	Recurring	5.00 0.10
	PKBASE-NR	PRO	Recurring	5.00 0.20
			Subtotal:	10.00 0.30
1994:	PKBASE-NR	ADM	Recurring	5.00 0.10
	PKBASE-NR	PRO	Recurring	5.00 0.20
			Subtotal:	10.00 0.30
1995:	PKBASE-NR	ADM	Recurring	6.00 0.10
	PKBASE-NR	PRO	Recurring	6.00 0.20
			Subtotal:	12.00 0.30
1996:	PKBASE-NR	ADM	Recurring	6.00 0.10
	PKBASE-NR	PRO	Recurring	6.00 0.20
			Subtotal:	12.00 0.30
1997:	PKBASE-NR	ADM	Recurring	6.00 0.20
	PKBASE-NR	PRO	Recurring	6.00 0.20
			Subtotal:	12.00 0.40
1998:	PKBASE-NR	ADM	Recurring	6.00 0.20
	PKBASE-NR	PRO	Recurring	6.00 0.20
			Subtotal:	12.00 0.40
			Total:	78.00 2.30
-----UNFUNDED-----				
		Activity	Fund Type	Budget (\$1000s) FTEs
				=====
			Total:	0.00 0.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Last Update: 01/15/98  
Initial Proposal: 1992

Project Statement

BUFF-N-310.000  
Priority: 0  
Page Num: 0230

Compliance codes : DOC (COVERED BY ANOTHER DOC)  
EIS (ENV. IMPACT STATEMENT)

Explanation: EIS PROPOSED MASTER PLAN, 9/75

Project Statement  
Last Update: 01/16/98  
Initial Proposal: 1998

BUFF-N-311.000  
Priority: 999  
Page Num: 0231

Title : PROTECT OPEN FIELDS, GLADES, AND SAVANNAH

Funding Status: Funded: 84.00 Unfunded: 47.00

Servicewide Issues : N17 (BIODIVERSITY)  
N06 (LAND USE PRAC)  
Cultural Resource Type: CULL (Cultural Landscape)  
N-RMAP Program codes : D00 (Disturbed Area Rehabilitation)

10-238 Package Number :

#### Problem Statement

The park has a range of areas threatened with loss from existing areas under hay permit, open fields reverting to forest, historic farm fields, glades, and savannahs. Many of these sites are of little wildlife value, woody species are invading where prescribed fire is not utilized, and are a source of exotic species such as fescue (sp).

A survey for the extent and existing vegetative condition of these areas has never been fully done for Buffalo National River. A preliminary action plan was completed in 1985 that addressed some issues, identified some sites, and made limited recommendations. Little action has been done to complete the assessment to prevent loss of some of the unique botanical areas and improve wildlife habitat.

#### Description of Recommended Project or Activity

The park is working with the Arkansas Game and Fish Commission to develop an open fields management plan which would survey lands within BUFF for historic farm fields, old hay fields, glades, and savannah. These would be geo-referenced, assessed for the need to introduce prescribed fire, eradicate exotics such as mimosa and fescue, re-establish native species, etc. and a plan developed. Some of the sites are prairie glades endangered of loss due to lack of prescribed fire according to the Arkansas Natural Heritage botanists.

Through support from the Game and Fish Commission (who have stationed a wildlife biologist in BUFF headquarters), Rocky Mountain Elk Foundation, Turkey Federation, and Quail Unlimited the initial phase of this project has begun. Several fields <100ac have been targeted for plowing to remove fescue and plant native grass.

Funds are lacking for a crew to perform the assessment so the plan can be completed and additional funds can be sought from

Last Update: 01/16/98  
Initial Proposal: 1998

# Project Statement

BUFF-N-311.000  
Priority: 999  
Page Num: 0232

these partners. A seasonal crew of three (survey skills, botanical background, and knowledge of the resource are critical) would be utilized for two years to complete this task.

A series of actions as listed above are planned depending upon the survey findings.

## BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1998:	PKBASE-NR	MIT	Recurring	10.00	0.20
	ST-LOCAL	MIT	Recurring	15.00	0.30
	NON-PROFI	MIT	Recurring	3.00	0.00
			Subtotal:	28.00	0.50
1999:	PKBASE-NR	MIT	Recurring	10.00	0.20
	ST-LOCAL	MIT	Recurring	15.00	0.30
	NON-PROFI	MIT	Recurring	3.00	0.00
			Subtotal:	28.00	0.50
2000:	PKBASE-NR	MIT	Recurring	10.00	0.20
	ST-LOCAL	MIT	Recurring	15.00	0.30
	NON-PROFI	MIT	Recurring	3.00	0.00
			Subtotal:	28.00	0.50
			Total:	84.00	1.50
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MIT	Recurring	23.50	3.00
Year 2:		MIT	Recurring	23.50	3.00
			Total:	47.00	6.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Last Update: 01/16/98  
Initial Proposal: 1998

Project Statement

BUFF-N-311.000  
Priority: 999  
Page Num: 0233

ARPA (ARCH. RES. PROT. ACT.)

Explanation: Soil disturbance mon. by staff arch

	Project Statement	BUFF-N-320.000
Last Update: 03/23/95		Priority: 999
Initial Proposal: 1994		Page Num: 0234

Title : FIRE HISTORY RESEARCH

Funding Status: Funded: 0.00 Unfunded: 35.00

Servicewide Issues : N07 (NAT FIRE REGM)  
N20 (BASELINE DATA)  
Cultural Resource Type:  
N-RMAP Program codes : V00 (Vegetation Management)  
V01 (Native Terrestrial Plant Management  
and Monitoring)

10-238 Package Number :

#### Problem Statement

Previous studies on wildland fire history and effects for BUFF predict a ten-fold increase in the length of the fire return interval from 11 years to 100 years. It was also reported that much of the Park is composed of fire dependent, if not fire tolerant, species.

The long-term trend toward changes in the plant composition of many communities due to this altered fire cycle is unknown. Will composition shift from fire-dependent to fire-resistant species with the loss of many unique communities?

Long-term monitoring of representatives of those communities needs to be implemented to detect shifts in plant composition due to the absence of fire. Additionally, an attempt should be made to assess the fire history for the Ozark Plateau area (BUFF) using methods which provide an older and more extensive data sets than the 1985 study.

#### Description of Recommended Project or Activity

Establish permanent vegetation plots within each community to detect long-term changes in composition. Prescribed fire should be applied to segments of these plots to approximate the historical fire cycle to allow for comparison.

Additional activities should include utilizing the GCC Tree Ring Project to develop a long-term fire chronology for the Ozark Plateau and to correlate research activities in fire management with Ozark Scenic Riverways as a partner in the Ozark Highlands program.

Last Update: 03/23/95  
Initial Proposal: 1994

Project Statement

BUFF-N-320.000  
Priority: 999  
Page Num: 0235

BUDGET AND FTEs:

Source		Activity	Fund Type	Budget (\$1000s)	FTEs
			Total:	0.00	0.00
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time		15.00	0.00
Year 2:	RES	One-time		15.00	0.00
Year 4:	MON	Cyclic		5.00	0.20
			Total:	35.00	0.20

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

Last Update: 03/23/95  
Initial Proposal: 1994

# Project Statement

BUFF-N-330.000  
Priority: 17  
Page Num: 0236

Title : LONG-TERM ECOLOGICAL MONITORING, TERRESTRIAL AREA

Funding Status: Funded: 0.00 Unfunded: 175.00

Servicewide Issues : N17 (BIODIVERSITY)  
N20 (BASELINE DATA)  
Cultural Resource Type:  
N-RMAP Program codes : V00 (Vegetation Management)  
V01 (Native Terrestrial Plant Management  
and Monitoring)

10-238 Package Number :

## Problem Statement

Most of the land area within Buffalo National River has been impacted to some degree by human activities (i.e. logging, grazing, mining) before establishment in 1972. Many of the areas disturbed by past human use are now undergoing ecological succession from open fields to forest. The National River's relatively narrow corridor means much of the protected area is in close proximity to adjacent private land. Land use on adjacent private land will influence the ecological processes of areas within the National River boundaries. Connective corridors have been advocated as one means to help reduce habitat fragmentation and its impact on bio-diversity. The effectiveness of these corridors will depend in part on their ability to remain ecologically intact given the changes occurring around them.

The designation of BNR as a core research area of the Ozark Highlands Biogeographical Area in the NPS Global Climate Change Program and its possible inclusion in the Man and the Biosphere Program increases the need for an understanding of changing terrestrial ecosystems.

## Description of Recommended Project or Activity

An understanding of the changes in vegetative communities and the fauna they support requires the development of a long term ecological monitoring of terrestrial communities. This program will require preliminary inventories of community structure (at all trophic levels) and the design and implementation of a monitoring program.



Last Update: 03/23/95  
Initial Proposal: 1994

Project Statement

BUFF-N-330.000  
Priority: 17  
Page Num: 0237

BUDGET AND FTEs:

Source		Activity	FUND Type	Budget (\$1000s)	FTEs
			Total:	0.00	0.00
		Activity	FUND Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time		25.00	0.00
Year 2:	RES	One-time		25.00	0.00
Year 3:	RES	One-time		50.00	0.50
Year 4:	RES	One-time		50.00	0.50
	MON	Cyclic		25.00	1.00
			Subtotal:	75.00	1.50
			Total:	175.00	2.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 App. 2, 1.6

Last Update: 01/15/98  
Initial Proposal: 1993

# Project Statement

BUFF-N-340.002  
Priority: 23  
Page Num: 0238

Title : POST OAK SAVANNAH ECOLOGICAL RESTORATION  
Sub-title: DESCRIBE PLANT COMMUNITY

Funding Status: Funded: 15.00 Unfunded: 10.00

Servicewide Issues : N07 (NAT FIRE REGM)  
N17 (BIODIVERSITY)

Cultural Resource Type:

N-RMAP Program codes : V00 (Vegetation Management)  
V01 (Native Terrestrial Plant Management  
and Monitoring)

10-238 Package Number :

## Problem Statement

A 1500 acre area in the lower Buffalo wilderness was identified during the summer of 1991 by the Arkansas Natural Heritage as a post oak savannah remnant unique to the state. The area encompasses the south slope of Turkey Mountain and part of Granite Mountain.

Past evidence of fire is present and field notes from original land survey indicate a very low tree density. However fire has been withheld since 1950 and aerial photos from the 1930, 1973, and 1988 indicate increase in cover from eastern red cedar.

During 1994-1996 a fire history has been completed for the Turkey Mountain area and permanent vegetation plots have been established. Three prescribed burns have occurred within the Turkey Mountain site omitting 25% of the plots.

The plots are being re-examined during 1998.

## Description of Recommended Project or Activity

Community Description and Plants Species Inventory - Characterize the savannah's vegetative community by cover, density, frequency, and dominance using standard methods such as releve, random quadrants, or line intercepts. Establish permanent vegetation plots to establish pre-fire baseline on vegetative composition. Measure fire intensities with the study area and correlate these factors with changes in vegetative composition and cover within the area. These plots have been established during FY93 and data analysis completed by FY94 for the Turkey Mountain site. Similar work needs to be completed for the Granite Mountain site but funds are lacking.

Last Update: 01/15/98  
Initial Proposal: 1993

Project Statement

BUFF-N-340.002  
Priority: 23  
Page Num: 0239

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1993:	PKBASE-NR RES	One-time	5.00	0.00
1998:	FED-OTHER MON	One-time	5.00	0.00
	ST-LOCAL MON	One-time	5.00	0.00
Subtotal:			10.00	0.00
Total:			15.00	0.00

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MON	One-time	10.00	0.00
Total:			10.00	0.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 App. 7.4 B(4)

	Project Statement	BUFF-N-340.003
Last Update: 01/29/98		Priority: 20
Initial Proposal: 1992		Page Num: 0240

Title : POST OAK SAVANNAH ECOLOGICAL RESTORATION  
 Sub-title: MONITOR PRESCRIBED FIRE

Funding Status: Funded: 25.00 Unfunded: 5.00

Servicewide Issues : N07 (NAT FIRE REGM)  
 N17 (BIODIVERSITY)  
 Cultural Resource Type:  
 N-RMAP Program codes : F00 (Prescribed Fire Management)  
 F02 (Prescribed Burn Long-Term Effects  
 Monitoring)

10-238 Package Number :

#### Problem Statement

See Problem Statement for Project Statement BUFF-N-340.002 for further information.

#### Description of Recommended Project or Activity

Based upon the results of the fire history study for Turkey Mountain indicating the fire dependency of the vegetative community, prescribed fire was used to restore and maintain the savannah community on Turkey Mountain by reducing the density and cover of shrubs and trees. Two burns have been conducted since 1995 and permanent vegetation plots established in 1995-96 are being re-examined during 1998. If biodiversity is affected positively the whole area including Granite Mountain will be burned in 2000.

#### BUDGET AND FTEs:

-----FUNDED-----					
Source	Activity	Fund Type	Budget (\$1000s)	FTEs	
1995: FIRE-\$	MON	Cyclic	5.00	0.10	
1996: FIRE-\$	MON	Cyclic	5.00	0.10	
1997: FIRE-\$	MON	Cyclic	5.00	0.10	
1998: FIRE-\$	MON	Cyclic	5.00	0.10	
1999: FIRE-\$	MON	Cyclic	5.00	0.10	

Last Update: 01/29/98  
Initial Proposal: 1992

Project Statement

BUFF-N-340.003  
Priority: 20  
Page Num: 0241

		=====		
Total:		25.00	0.50	
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 4:	MON	Cyclic	5.00	0.10
		=====		
Total:		5.00	0.10	

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EA (ENV. ASSESSMENT)

Explanation: EA completed before action

Last Update: 03/23/95  
Initial Proposal: 1994

## Project Statement

BUFF-N-410.000  
Priority: 999  
Page Num: 0242

Title : BLACK BEAR POPULATION MONITORING

Funding Status: Funded: 2.50 Unfunded: 7.50

Servicewide Issues : N20 (BASELINE DATA)  
Cultural Resource Type:  
N-RMAP Program codes : W00 (Wildlife Management)  
W07 (Bear Management)

10-238 Package Number :

## Problem Statement

Little is known regarding the status of black bear, *Ursus americanus*, within the Park and no specific management objectives have been developed for monitoring activities. BUFF needs to develop a cooperative program with the State Game and Fish Commission to monitor and collect baseline data on bear activities within Park boundaries. The State has an active monitoring program with 60 study sites, mast surveys, etc. but none within or adjacent to the Park.

Other parks with bear populations have experienced large numbers of bear/visitor contacts and devote considerable resources to managing these incidences. Incidences within BUFF have been limited to sightings, resource impacts or tracks close to areas of high visitor use.

It is critical for management to detect potential issues regarding bear activities and to base decisions on sound baseline data. A cooperative monitoring effort with the State represents the best avenue to acquire this baseline data.

## Description of Recommended Project or Activity

Develop a cooperative effort with Arkansas Game and Fish Commission to expand their existing monitoring program to BUFF. This would include study sites for home range, denning dates, etc, and surveys for abundance of black bear within the Park.

Last Update: 03/23/95  
Initial Proposal: 1994

Project Statement

BUFF-N-410.000  
Priority: 999  
Page Num: 0243

BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	PKBASE-NR MON	Recurring	2.50	0.10
Total:			2.50	0.10

		-----UNFUNDED-----		
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MON	Recurring	2.50	0.10
Year 2:	MON	Recurring	2.50	0.10
Year 3:	MON	Recurring	2.50	0.10
Total:			7.50	0.30

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 App. 7.4 E(2)

Project Statement  
Last Update: 03/23/95  
Initial Proposal: 1994

BUFF-N-412.000  
Priority: 999  
Page Num: 0244

Title : WHITETAIL DEER MONITORING

Funding Status: Funded: 0.00 Unfunded: 12.00

Servicewide Issues : N19 (CONSUMPT USE)  
N20 (BASELINE DATA)  
Cultural Resource Type:  
N-RMAP Program codes : W00 (Wildlife Management)  
W01 (Native Terrestrial Animal  
Management & Monitoring)

10-238 Package Number :

#### Problem Statement

Cooperative programs with Arkansas Game and Fish Commission are needed to provide baseline data on deer herd numbers, health, and the potential conflicts with other natural resources within BUFF. Buffalo National River has contributed to deer restoration programs in the past with the State Game and Fish Commission through the establishment of three deer restoration areas. Additionally, baseline data on herd health, abundance, and habitat was also collected on a 6,800 ha site in the Lower Buffalo Wilderness Area. However, the State's ability to collect data on hunter take and use is limited to county-by-county records. A current effort by the State to develop a Deer Management Plan will provide long range planning for future hunting within the State and policies which could effect BUFF. Current State data indicates that in many areas herd/sex ratios are out of balance, the number of does is increasing, and harvest of antlerless deer may be encouraged. Because of the lack of data specific for BUFF and the States' current planning effort it is essential that we be involved cooperatively in this data collection.

#### Description of Recommended Project or Activity

A cooperative program needs to be implemented with the State Game and Fish Commission to acquire information on the harvest of deer on NPS lands and the level of hunter use.

This program would also assist the State in aerial and spotlight surveys to acquire baseline data on herd abundance. A limited study of herd health needs to be implemented through the Disease Study Team affiliated with the Southeast Cooperative Wildlife Study Unit at Athens, GA.



Last Update: 03/23/95  
Initial Proposal: 1994

# Project Statement

BUFF-N-412.000  
Priority: 999  
Page Num: 0245

## BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MON	Recurring	1.50	0.10
	MON	Recurring	0.50	0.00
	RES	One-time	5.00	0.00
Subtotal:			7.00	0.10
Year 2:	MON	Recurring	1.50	0.10
Year 3:	MON	Recurring	1.50	0.10
	MON	Recurring	0.50	0.10
Subtotal:			2.00	0.20
Year 4:	MON	Recurring	1.50	0.10
Total:			12.00	0.50

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 App. 7.4 E(2)

	Project Statement	BUFF-N-413.000
Last Update: 03/23/95		Priority: 999
Initial Proposal: 1992		Page Num: 0246

Title : DETERMINE INFLUENCE OF BEAVER ON RIPARIAN VEGET.

Funding Status: Funded: 0.00 Unfunded: 30.00

Servicewide Issues : N20 (BASELINE DATA)  
                               N01 (NAT ANML OVPOP)  
 Cultural Resource Type:  
 N-RMAP Program codes : W00 (Wildlife Management)  
                               W02 (Native Aquatic Animal Management &  
   Monitoring)

10-238 Package Number :

#### Problem Statement

Beaver are a common and important component of the river's riparian environment because of their ability to alter vegetative composition and water regimes. The presence of beaver has been found to be closely associated with the ability of river otter to repopulate an area. River otters use abandoned beaver dens and benefit from the palustrine aquatic areas created by beaver dams on tributaries. Information on the Buffalo River's beaver population, distribution, and impact on riparian vegetation is not currently available.

#### Description of Recommended Project or Activity

Conduct a survey of the river corridor and major tributaries to develop estimates of beaver populations, impact on riparian vegetation and creation of palustrine aquatic areas. The survey will require two persons to travel the length of the river and record locations with beaver activity, den sites and the number, size and species of trees cut by beaver. The survey will be done during the winter and early spring period when visibility is best. Field work will require two weeks.

#### BUDGET AND FTEs:

-----FUNDING-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00

	Project Statement	BUFF-N-413.000
Last Update: 03/23/95		Priority: 999
Initial Proposal: 1992		Page Num: 0247

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	15.00	0.00
Year 2:	RES	One-time	15.00	0.00
			=====	
	Total:		30.00	0.00

(Optional) Alternative Actions/Solutions and Impacts  
 (No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 App. 2, 1.6

Last Update: 02/03/98  
Initial Proposal: 1992

Project Statement

BUFF-N-414.000  
Priority: 999  
Page Num: 0248

Title : GREAT BLUE HERON; MONITOR NESTING SITES

Funding Status: Funded: 6.00 Unfunded: 8.00

Servicewide Issues : N20 (BASELINE DATA)  
Cultural Resource Type:  
N-RMAP Program codes : W00 (Wildlife Management)  
W01 (Native Terrestrial Animal  
Management & Monitoring)

10-238 Package Number :

Problem Statement

The Arkansas Natural Heritage Commission monitors the status of heron rookeries across the state. While Great Blue Herons are common year round residents on the Buffalo River, the only rookery known on the river was first observed in 1990. This rookery is directly adjacent to the river and easily visible to thousands of boaters. The number of nests in the rookery increased from 12 in 1990 to 22 in 1991. On June 3, 1991 thirty five young herons were counted in the rookery.

Since 1991, two additional great blue heron rookeries have been located within the National River.

Some local anglers have negative feelings toward Great Blue Herons. To date no such hostilities have occurred at the new rookery.

Population levels of Great Blue Herons on the Buffalo River are not known.

Description of Recommended Project or Activity

Monitor the status of great blue heron rookeries on a monthly basis beginning in April and continuing through June. Maintain a record of the number of nests occupied, the number of young fledged and the level of disturbance caused by passing boats.

Locations of all heron rookeries will be reported to the State Natural Heritage Commission for inclusion in the Natural Heritage database.

This project will be carried out by a SCA Resource Assistant under the supervision of the Resource Management Specialist.

Last Update: 02/03/98  
Initial Proposal: 1992

Project Statement

BUFF-N-414.000  
Priority: 999  
Page Num: 0249

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1992:	PKBASE-NR	MON	Recurring	1.00	0.01
1993:	PKBASE-NR	MON	Recurring	1.00	0.01
1994:	PKBASE-NR	MON	Recurring	1.00	0.01
1995:	PKBASE-NR	MON	Recurring	1.00	0.01
1996:	PKBASE-NR	MON	Recurring	1.00	0.01
1997:	PKBASE-NR	MON	Recurring	1.00	0.01
Total:				6.00	0.06
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MON	Recurring	2.00	0.01
Year 2:		MON	Recurring	2.00	0.01
Year 3:		MON	Recurring	2.00	0.01
Year 4:		MON	Recurring	2.00	0.01
Total:				8.00	0.04

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 App. 2, 1.7

Last Update: 03/19/96  
Initial Proposal: 1994

## Project Statement

BUFF-N-415.001  
Priority: 2  
Page Num: 0250

Title : ELK MANAGEMENT  
Sub-title: HABITAT & POPULATION RES.

Funding Status: Funded: 0.00 Unfunded: 303.00

Servicewide Issues : N20 (BASELINE DATA)  
N08 (CULT LANDSCAPE)  
Cultural Resource Type:  
N-RMAP Program codes : W00 (Wildlife Management)  
W01 (Native Terrestrial Animal  
Management & Monitoring)

10-238 Package Number :

## Problem Statement

### Introduction

Elk historically ranged throughout eastern North America but were extirpated during the mid to late 19th century, probably due to excessive unregulated harvest and habitat alteration. The eastern subspecies of elk (*Cervus elaphus canadensis*) was extirpated from Arkansas by 1840 and is extinct (Bryant, 1982). Reintroductions, primarily using the Rocky Mountain subspecies (*C. e. nelsoni*), have been attempted in 7 states eastward from Oklahoma during the 20th century. In only four of these states (Michigan, Oklahoma, Arkansas, and Pennsylvania) have reintroduced populations grown rapidly enough and attained high enough levels that the reintroductions can be considered successful. Following an unsuccessful elk reintroduction attempt in Franklin County, Arkansas, that spanned about 20 years (ca. 1933mid1950's), a second attempt at reintroduction was made by the Arkansas Game and Fish Commission in Newton County, Arkansas, 1981-85 (Cartwright, 1991). A total of 112 elk were released on, or adjacent to, National Park Service Lands on the Buffalo National River (BUFF). Infrared aerial surveys indicated a minimum population of about 320 elk in the winter of 1994. This population level suggests an average annual growth rate of about 10% since reintroduction. Interim or current growth rates are unknown.

Because elk are primarily grazers, their success at BUFF may be a function of the proportion of the land in open hay meadows. Meadows in BUFF are anthropogenic in origin and are the most widespread plant community management issue to the National River. The BUFF Master Plan recognizes the importance of hay meadows as component of the cultural landscape. In addition, the National River is viewed by the public as the source of elk, and depredation complaints have been increasing during the past few years. Thus, persistence of elk, persistence of historical cultural land use patterns, NPS management of natural plant successional patterns in BUFF, and relations with adjacent

Last Update: 03/19/96  
Initial Proposal: 1994

## Project Statement

BUFF-N-415.001  
Priority: 2  
Page Num: 0251

private landowners, visitors, and the state wildlife agency are integrated.

### 1. Resource Significance

Buffalo National River provides the habitat for one of only 4 apparently selfsustaining elk populations in the historical range of the eastern elk. The BUFF population is a critical component of the eastern metapopulation of elk and contributes substantially to persistence of the historical large vertebrate fauna of the eastern United States. Elk in Arkansas are a species of special concern to BUFF, the Arkansas Game and Fish Commission (AGFC), and the citizens of the state. Nonconsumptive recreational viewing of elk at BUFF provides a unique opportunity for visitors to observe results of an ecosystem management project that restored an historical component of a disturbed ecosystem. Continuance of the elk population on BUFF is consistent with the enabling legislation (P.L.92-237) which states that the National River was established "for the purposes of conserving and interpreting an area containing unique scenic and scientific features....." as well as NPS management policies on restoration of native plants and animals. BUFF's Master Plan (1977) includes the resource management objective of "Extirpated species will be reintroduced where feasible".

### 2. Severity of Resource Problem

Maintenance of meadows (approximately 5,000 acres) in an open condition is facilitated by permits, leases, easements on private land, and use and occupancy reservations. As the reservations of use on 2,000 acres of land expire within 5-10 years, critical management decisions need to be made regarding these open fields. The NPS will have to decide: 1) whether these meadows are a critical component of habitat for resident fauna, 2) what proportion of the National River lands should remain in open meadows, 3) what distribution of meadows within BUFF will satisfy management goals, and 4) what methods should be used to maintain meadows that may be retained. Hunting is permitted within BUFF, but there is not yet a legal elk hunt. As the elk population continues to grow, interest in legal hunting has increased. The AGFC is proposing a limited permit elk hunt beginning in 1997, the park will need data necessary to evaluate the impact of hunting on the population. Monitoring elk populations and herd health will provide essential data on which to base management direction.

Scientific information necessary to make these decisions is currently unavailable. It will take 35 years to obtain the necessary scientific information and additional time to incorporate scientific data into management strategies. During this time, unmanaged meadows will continue to revert to shrublands and forest. Timeliness of management decisions requires that scientific data collection begin now.

### 3. Problem Definition and Information Base

Last Update: 03/19/96  
Initial Proposal: 1994

## Project Statement

BUFF-N-415.001  
Priority: 2  
Page Num: 0252

There is not sufficient information available to assess the value of anthropogenic meadows to elk persistence and well being on BUFF, nor to assess the level of harvestable surplus that could be accommodated. BUFF meadows may be critical to persistence of the state's elk herd. Elk are commonly seen in meadows on BUFF but visibility bias may inflate the apparent importance of meadows to elk. Comparison of aerial infrared surveys and helicopter visual surveys suggests less than onehalf the elk are using meadows at any given time.

It is known that 1) more than 90% of elk observations have come from the Buffalo River corridor but visibility bias may inflate this estimate, 2) elk occupy the upper onehalf of BUFF but have not dispersed downriver below the Highway 65 bridge, 3) elk are sporadically observed in out lying counties more than 10 miles from the Buffalo river, 4) poaching (ca. 35% of 31 documented mortalities) and disease (ca. 45% of documented mortalities) are the two most important mortality sources. Meningeal worm (*Parelaphostrogylus tenuis*) is endemic to the area, is present in sympatric whitetailed deer (*Odocoileus virginianus*), is fatal to elk, and has been documented to cause elk mortality in BUFF.

What is not known, but essential to development of a management strategy for potential elk habitat on BUFF, is:

- 1) what is the seasonal extent of the area used by elk,
- 2) what proportion of time is spent by elk on BUFF, national forests, state wildlife management areas, and private lands,
- 3) what habitats (e.g forest, or grazed, hayed, burned, or abandoned meadows) and foods are selected and of highest value to elk,
- 4) can enhancement of selected habitats on BUFF reduce potential impacts of elk on adjacent private lands,
- 5) what is the incidence of *P. tenuis* infection of elk,
- 6) is elk exposure to intermediate gastropod hosts of *P. tenuis* influenced by elk habitat selection,
- 7) what are implications of *P. tenuis* infection for population dynamics of elk,
- 8) what is the current trend in population level and existing demographic characteristics of the elk herd and what are the implications of these demographics for potential hunter harvest should a hunting season be opened?

## Description of Recommended Project or Activity

1. Determine seasonal habitat utilization by elk.

Thirty adult cows will be captured with net guns from a helicopter. The study area will be prestratified based on infrared and helicopter elk census results and captures will be apportioned relative to expected abundance of elk. Cows will be



collared with activity/mortality sensing collars and relocated from fixedwing aircraft at an anticipated frequency of once every 4 days. Nocturnal relocations will be ground based. Area occupied by elk (available habitat) will be defined as the outer perimeter of all the superimposed 95% adaptive kernel home ranges of all cows.

Habitat selection analyses will follow B. F. J. Manly et al. (1993, Resource Selection by Animals, Chapman & Hall, London) which considers the animal to be the experimental unit.

## 2. Analysis of vegetation characteristics of habitats used by elk.

Standard vegetation sampling methods appropriate to the spatial distribution of presumed important plant species will be used to estimate canopy coverage of forage items other than shrubs, stem density and height of shrubs, and canopy coverage of trees which may provide thermal cover. Sampling will be stratified by vegetation cover classes from available GAP maps (30 m. pixels) as adjusted by local vegetation maps. All vegetation cover classes will be mapped in GIS systems to facilitate estimation of area coverage and habitat selection analyses.

## 2. Determine seasonal food habits of elk.

Fresh fecal pellet groups will be collected throughout the year and analyzed by microhistological methods to estimate uncorrected percentage composition of diets. Diet correction factors developed for grass, forb, and shrub classes will be obtained from the literature. Forages will be rankordered on the basis of their relative importance.

## 3. Estimate parturition rate, calf survival, and adult cow survival.

Parturition rate will be estimated from observations of distended udders and/or calves of radiocollared cows at calving; calf survival will be estimated from the repeated observations of calves born to these cows; adult cow survival will be estimated from the fates of radiocollared cows. Cause of mortality will be estimated from necropsy.

## 4. Estimate the seasonal relative abundance of intermediate gastropod hosts for the meningeal worm, *P. tenuis*, and the potential exposure of elk to these hosts in habitats used by elk.

Gastropod abundance will be estimated by standard line transect methodology. Transects will be randomly placed in forest and in the 4 types of meadow (grazed, mowed, burned, abandoned).

Foraging behavior of elk in forest and the 4 meadow habitats will be estimated from focal animal sampling in spring and fall to estimate relative exposure to intermediate gastropod hosts for *P. tenuis*.

Last Update: 03/19/96  
Initial Proposal: 1994

Project Statement

BUFF-N-415.001  
Priority: 2  
Page Num: 0254

5. Estimate the incidence of *P. tenuis* in adult female elk.

Fecal pellets are unreliable indicators of infection rates, but serological tests have been developed at the University of Alberta, Edmonton. These tests are promising, but await field validation. Blood will be collected from captured elk, analyzed, and held in archive until field validation trials are complete. This will provide historical baseline information on infection rates.

6. Correlate population estimates from late winter helicopter census counts and infrared censuses.

Traditional late winter helicopter censuses of elk will be compared to aerial infrared censuses in order to estimate proportion of elk seen on conventional helicopter censuses and provide basis for estimating current trend in population level.

4. Feasibility

The methodology to study elk populations are well developed and tested. A wildlife biologist assigned to the National Biological Service's Arkansas Fish and Wildlife Cooperative Research Unit has extensive experience in large ungulate projects and is available to direct this project. Support facilities are available at BUFF and the Resource Management Division has personnel capable of administering the project.

5. Problem Resolution

The project will provide the information necessary to identify the relative value of habitats to elk in terms of forage, thermal cover, and potential exposure to meningeal worm parasites. The data will allow ranking the value of forest compared to meadows and will further allow ranking the 4 types of meadows (grazed, mowed, burned, abandoned) in terms of value to elk. This information can be used to decide if anthropogenic meadows should be maintained on BUFF, and, if maintained, which management techniques yield the greatest benefit to elk. Elk habitat use patterns in areas with differing proportions of meadows will allow assessment of the potential for habitat management to hold elk on BUFF and reduce potential depredation by elk on adjacent private lands.

Demographic and population trend data will allow assessment of the potential allowable hunter harvest. Data obtained in this study will be compared to field estimates in other areas to assist in this evaluation.

6. Transferability

Habitat selection patterns observed in BUFF elk will allow assessment of habitat quality for elk in similar areas in the eastern United States and help evaluate any future reintroduction sites. In particular, the ecological interaction between habitat

use by a susceptible ungulate and exposure to **P. tenuis** will be applicable nationwide in areas where other ungulates may potentially coexist with whitetailed deer.

Information developed from this study will be published in refereed national scientific journals, in BUFF documents, and made available to the public.

BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
Total:			0.00	0.00
		-----UNFUNDED-----		
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	ADM	One-time	4.00	0.10
	MON	One-time	45.00	0.00
	Subtotal:		49.00	0.10
Year 2:	MON	One-time	123.00	0.00
	ADM	One-time	4.00	0.10
	Subtotal:		127.00	0.10
Year 3:	MON	One-time	123.00	0.00
	ADM	One-time	4.00	0.10
	Subtotal:		127.00	0.10
Total:			303.00	0.30

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

Last Update: 01/29/98  
Initial Proposal: 1995

# Project Statement

BUFF-N-415.003  
Priority: 0  
Page Num: 0256

Title : ELK MANAGEMENT  
Sub-title: WAY-SIDE EXHIBITS

Funding Status: Funded: 30.00 Unfunded: 0.00

Servicewide Issues : N22 (VIS USE-DEV ZN)  
Cultural Resource Type:  
N-RMAP Program codes : I00 (Interp. of Natural Resource Issues)  
10-238 Package Number :

## Problem Statement

An introduced Rocky Mountain elk was established by the Arkansas Game and Fish Commission in the mid-1980s. As this population has grown and become established, the viewing of elk by visitors has become increasingly popular. Several locations frequented by elk are adjacent to high use areas and highways. Magazine articles and tourism brochures are promoting the presence of the elk in state-wide and regional media.

Human-elk interactions have increased and incidents of visitors feeding elk, elk charging visitors, and visitors driving on leased agricultural fields have increased. The potential for harm to both visitors and wildlife is increasing.

## Description of Recommended Project or Activity

The NPS, Arkansas Game and Fish Commission, and the private Rocky Mountain Elk Foundation will cooperatively develop way-side exhibits for four popular elk viewing locations. The exhibits will provide background on how and why the elk came to Buffalo River, the habitat needs of Buffalo River, and the safe way to view elk (from a distance).

### BUDGET AND FTEs:

		-----FUNDED-----			
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1996:	\$-DONATE	INT	One-time	6.00	0.00
	ST-LOCAL	INT	One-time	2.00	0.00
	PKBASE-OT	INT	One-time	2.00	0.05
				-----	-----
Subtotal:				10.00	0.05

Last Update: 01/29/98  
Initial Proposal: 1995

Project Statement

BUFF-N-415.003  
Priority: 0  
Page Num: 0257

1997:	\$-DONATE	INT	One-time	6.00	0.00
	ST-LOCAL	INT	One-time	2.00	0.00
	PKBASE-OT	INT	One-time	2.00	0.05
				-----	
			Subtotal:	10.00	0.05
1998:	\$-DONATE	INT	One-time	6.00	0.00
	ST-LOCAL	INT	One-time	2.00	0.00
	PKBASE-OT	INT	One-time	2.00	0.05
				-----	
			Subtotal:	10.00	0.05
				=====	
			Total:	30.00	0.15

-----UNFUNDED-----			
Activity	Fund Type	Budget (\$1000s)	FTEs
=====			
Total:		0.00	0.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 C(5)

Last Update: 02/03/98  
Initial Proposal: 1992

Page Num: 0258

Servicewide Issues : N17 (BIODIVERSITY)  
                               N20 (BASELINE DATA)  
 Cultural Resource Type:  
 N-RMAP Program codes : W00 (Wildlife Management)  
                               W04 (Reintroduction of Extirpated  
                                       Animals)

## Problem Statement

Description of Recommended Project or Activity

BUDGET AND FTEs:

			FUNDED-		
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1992:	PKBASE-NR	MON	Recurring	1.50	0.10
1993:	PKBASE-NR	MON	Recurring	1.50	0.10
1994:	PKBASE-NR	MON	Recurring	1.50	0.10
1995:	PKBASE-NR	MON	Recurring	1.50	0.10
1996:	PKBASE-NR	MON	Recurring	1.50	0.10
1997:	PKBASE-NR	MON	Recurring	1.50	0.10

	Project Statement	BUFF-N-418.000
Last Update: 02/03/98		Priority: 999
Initial Proposal: 1992		Page Num: 0259

		=====		
Total:		9.00	0.60	
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MON	Recurring	2.00	0.01
Year 2:	MON	Recurring	2.00	0.01
Year 3:	MON	Recurring	2.00	0.01
Year 4:	MON	Recurring	2.00	0.01
		=====		
Total:		8.00	0.04	

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 App. 2, 1.6

Project Statement  
Last Update: 03/19/96  
Initial Proposal: 1996

BUFF-N-419.001  
Priority: 18  
Page Num: 0260

Title : IMPLEMENT FISHERIES MANAGEMENT PROGRAM  
Sub-title: MONITOR SMALLMOUTH BASS

Funding Status: Funded: 0.00 Unfunded: 15.00

Servicewide Issues : N00 (FISHERIES)  
N19 (CONSUMPT USE)  
Cultural Resource Type:  
N-RMAP Program codes : W00 (Wildlife Management)  
W08 (Fisheries Management)

10-238 Package Number :

### Problem Statement

#### INTRODUCTION

Smallmouth bass (Micropterus dolomieu) is a native to the Buffalo River and is the river's most popular sportfish. The importance and value of this particular sportfish is mentioned within the legislative history (House Report 92-807) of the National River's enabling Act. The Arkansas Game and Fish Commission (AG&FC) recognizes the quality of Buffalo River's smallmouth sportfishing resource through its "Blue-Ribbon Smallmouth Bass Stream" designation in **The Arkansas Smallmouth Bass Management Plan** (AG&FC, 1995). The smallmouth bass is also considered to be an excellent indicator of water quality and stream health. It is less tolerant of habitat alteration than any of the other black basses, and is especially intolerant of high turbidity and siltation (Robison, 1988).

In 1994, the AG&FC modified its regulations for smallmouth on the Buffalo River by reducing the daily creel limit from six per day to two per day and increasing the minimum length limit from 10 inches to 14 inches. These management actions were in response to surveys in 1992 and 1993 indicating fast growth, low natural mortality and high fishing mortality. Management objectives for smallmouth bass are based upon maintaining density/biomass, recruitment, growth, and mortality within certain ranges. To determine changes in these parameters following the change in fishing regulations will require additional fisheries surveys.

The NPS, AG&FC and U.S. Forest Service completed a joint fisheries management plan for the Buffalo River in 1995. That plan includes the goal of providing diverse and quality recreational angling opportunities for native species. Part of that goal includes the objective of correlating recreational use data with long term biological monitoring to recognize potential impacts to the sportfishing resource.



Last Update: 03/19/96  
Initial Proposal: 1996

Project Statement

BUFF-N-419.001  
Priority: 18  
Page Num: 0261

Description of Recommended Project or Activity

Utilize standardized electrofishing techniques to sample three pool/riffle complexes in reference reaches of the Buffalo River (Upper, Middle, and Lower). Fish will be measured, weighed, and have scales removed for age, growth and survival estimates. Catch rates will be compared to recapture/capture (R/C) ratios (ratio of marked individuals collected during a recapture run to the total number of individuals collected). While R/C ratios are not population measure, they are an indication of the efficiency of sampling. Catch rates and population estimates will be compared using correlation coefficient analysis to determine the relationship of the two parameters and whether catch rates for smallmouth bass could be used as indices for assessing changes in populations from year to year and for evaluating management strategies.

Age/frequency analysis will be used to determine survival and mortality rates. Proportional Stock Density (PSD) and Relative Stock Density (RSD) indices along with population estimates or catch rates will be used to evaluate population changes. Length/frequency analysis will be used to determine effects of new management regulations.

Literature Cited

Arkansas Game and Fish Commission, 1995. Arkansas Smallmouth Bass Management Plan, Little Rock.

Committee on Interior and Insular Affairs, U.S. House of Representatives, 1972. Providing for the Establishment of the Buffalo National River in the State of Arkansas, and for other Purposes. Report No. 92-807.

Missouri Department of Conservation, 1994. Methods to assess status of smallmouth bass in Ozark streams; Final Report. Sport Fish Restoration Project F-1-R-43.

Robison, Henry W. and Thomas M. Buchanan, 1988. Fishes of Arkansas. University of Arkansas Press, Fayetteville, Arkansas.

BUDGET AND FTEs:

-----FUNDING-----		-----FUNDING-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
		=====		
		Total:	0.00	0.00

Last Update: 03/19/96  
Initial Proposal: 1996

Project Statement

BUFF-N-419.001  
Priority: 18  
Page Num: 0262

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MON	Cyclic	7.50	0.10
Year 3:	MON	Cyclic	7.50	0.10
Total:			=====	=====
			15.00	0.20

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

Last Update: 01/27/98  
Initial Proposal: 1995

## Project Statement

BUFF-N-419.002  
Priority: 999  
Page Num: 0263

Title : IMPLEMENT FISHERIES MANAGEMENT PROGRAM  
Sub-title: RESTORE CHANNEL CATFISH

Funding Status: Funded: 43.00 Unfunded: 52.00

Servicewide Issues : N00 (FISHERIES)  
Cultural Resource Type:  
N-RMAP Program codes : W00 (Wildlife Management)  
W08 (Fisheries Management)

10-238 Package Number :

## Problem Statement

Channel catfish (Ictalurus punctatus) are native to the Buffalo River and have historically provided an important recreational fishery. Reports of recreational anglers over the past few decades suggest a gradual decline in fishing quality and overall catches. Water quality and habitat are not limiting factors for channel catfish populations in the Buffalo River and there is little evidence of overfishing. It has been suggested by some researchers that the construction of Bull Shoals Reservoir in 1952 and the alteration of the White River upstream and below the confluence of the Buffalo River into a coldwater tail-race may have contributed to the decline of the channel catfish population in the Buffalo River by restricting population movements between the two rivers. Tagging studies conducted on catfish stocked in the Buffalo River suggest that considerable numbers of fish may move downstream into the White River and are likely lost to the Buffalo River spawning population. In addition, any young-of-year (YOY) channel catfish produced in the Buffalo River that migrate downstream into the White River would likely suffer significant mortalities due to thermal shock.

The overall effects of these factors has been a reduction in reproductive effort and recruitment of channel catfish in the Buffalo River and an overall decline in the population and the recreational fishery it supports. A creel census funded by NPS in 1991 provided interviews with 60,000 recreational anglers in the daytime fishery and documented the catch of only one channel catfish. Studies conducted by the University of Arkansas estimated that the adult channel catfish population ranged from 4,400 - 6,100 fish with the majority of these located in the lower and middle sections of the river below the confluence of Cave Creek. In efforts to continue to provide a limited recreational fishery, the Arkansas Game and Fish Commission has stocked over 300,000 channel catfish in the Buffalo River and its tributaries since 1942. Despite these efforts, there is little recruitment of YOY and stocked fish represent over 90% of the adult population. It is also likely that the extensive stocking of domestic catfish and the limited production of wild fish has completely altered the genetic make-up of the original Buffalo

Last Update: 01/27/98  
Initial Proposal: 1995

## Project Statement

BUFF-N-419.002  
Priority: 999  
Page Num: 0264

River strain. It has been speculated that the cooler, clearer waters of the Buffalo River may not be suitable for sustaining a channel catfish population derived from domestic hatchery stocks.

## Description of Recommended Project or Activity

The goals of this project are to restore a wild, self-sustaining population of channel catfish in the Buffalo River and to provide a traditional recreational fishery, within the limits of the river's productive capacity, without hatchery supplementation. The project is multi-faceted and will include assessments of population genetics, annual stockings of yearling catfish to increase the adult spawning population, and the monitoring of survival, growth and reproductive success of stocked catfish. Distributions and movements of stocked fish and the contributions of both stocked and wild fish to the recreational catch will be monitored through a tagging program. The project includes the following tasks:

TASK 1. Develop and manage a broodstock for use in Buffalo River channel catfish restoration efforts.

Channel catfish from the Buffalo River, Kings River, Lower White River and the Arkansas domestic hatchery stock will be genetically typed using appropriate molecular genetics techniques. Genetic typing of the Buffalo River stock would serve as a baseline to measure future changes in genetic make-up of the catfish population. The Kings River and Lower White River stocks are potential stocks for restoration efforts and the Arkansas domestic hatchery stock has been stocked extensively in the Buffalo River to support the recreational fishery.

Broodstock development will emphasize the Kings River stock. This stock inhabits riverine habitats and conditions most similar to those of the Buffalo River. Approximately 35-50 pair of adult spawners will be collected from the King River by Arkansas Game and Fish Commission and NPS biologists and transported to the Mammoth Springs NFH (or a state fish hatchery) for rearing. Hatchery production goals would be to produce approximately 5,000, 8-inch yearlings for stocking the following fall.

TASK 2. Annually mark and stock 5,000 yearling channel catfish in the Buffalo River.

Catfish at the Mammoth Springs NFH will be reared to a minimum size of 8-inches and stocked as a fall yearling. All fish will be tagged with Floy T-bar reward tags prior to stocking. Tagging of fish will be a joint effort of NPS and the Arkansas Game and Fish Commission and may involve participants from other agencies and/or volunteers. Fish will be stocked throughout the Buffalo River at a stocking rate of 30-40 fish/mile. Fish will be float

Project Statement

Last Update: 01/27/98  
Initial Proposal: 1995

BUFF-N-419.002  
Priority: 999  
Page Num: 0265

stocked to maximize distributions throughout the river and to avoid locally high densities of fish which may be subject to angler harvest. Arkansas Game and Fish Commission will cease all stockings of channel catfish in the tributaries during the duration of this project.

Annual stocking rates will be evaluated based on the relative abundance of YOY catfish and recruitment of wild fish to the adult population and fishery. Threshold criteria for stocking levels will be developed using population data collected in Task 3.

TASK 3. Monitor relative abundance of stocked and wild catfish populations.

Sites at Erbie (upper river), Tyler Bend (middle river), and Rush (lower river) will jointly be sampled each fall by Arkansas Game & Fish Commission and NPS biologists using a DC-electrofishing boat. Two boats, one operated by the state and one operated by NPS, will employ similar designs, electrode configurations, voltage, and phase and pulse to allow for standardization. AGFC will assist NPS technicians in the design and construction of an NPS electrofishing unit. A pre-stocking sample will be collected to provide a baseline and to serve as a comparison with earlier studies. Sampling reaches will be identified and the physical habitat inventoried annually prior to fish collections. Fish collections will include all species and minimally include length and weight measurements for channel catfish and other sport fishes. Other parameters and/or data may be collected to fulfill program needs of Arkansas Game and Fish Commission. All yearling or older wild channel catfish collected will be marked with Floy T-bar tags to provide information on movements, growth, survival, and angling exploitation.

Sites at Erbie (upper river), Tyler Bend (middle river), and Rush (lower river) will also be sampled by NPS during June and July using larval drift nets. Rectangular drift nets (20 x30 cm, 0.5 mm mesh) will be randomly positioned across a transect at the head of a riffle. Water velocity and depth will be measured to allow for representation of net catches per unit of standard water volume. The sampling schedule for each site will include 4 net samples collected randomly every six days and will continue through mid-July or until no additional larvae are collected in the drift.

TASK 4: Monitor the angler catch and harvest.

Channel catfish will be marked with Floy T-bar tags. Tagged fish will be readily noticeable by anglers and the tag marked with a "REWARD" label to encourage tag returns or reports. Tags will be returned to NPS and information summarized monthly and provided to AGFC to allow for follow-up reporting. NPS will be responsible for issuance of "REWARD" payments to anglers and will administer payments through the park's impress account. Signs indicating that angler reports of tagged channel catfish are important to

Last Update: 01/27/98  
Initial Proposal: 1995

# Project Statement

BUFF-N-419.002  
Priority: 999  
Page Num: 0266

the restoration effort will be posted by NPS at all access points, in ranger stations, and the visitor center. Angler returns will provide information on movements, growth, survival, and angling exploitation.

## BUDGET AND FTEs:

Source	Act Type	Budget (\$1,000) (non-FTE)	FTEs
-----UNFUNDED-----			
TASK 1			
Year 1		17.0	0.2
Year 2		7.0	0.1
Year 3		7.0	0.1
Year 4		7.0	0.1
Subtotal		38.0	0.6
TASK 2			
Year 1		3.0	0.2
Year 2		8.0	0.2
Year 3		8.0	0.2
Year 4		8.0	0.2
Subtotal		27.0	0.8
TASK 3			
Year 1		7.0	0.6
Year 2		2.0	0.6
Year 3		2.0	0.6
Year 4		2.0	0.6
Subtotal		13.0	2.4
TASK 4			
Year 1		2.0	0.1
Year 2		2.0	0.1
Year 3		2.0	0.1
Year 4		2.0	0.1
Subtotal		8.0	0.4
PROJECT TOTAL		77.0	4.2

## BUDGET AND FTEs:

			-----FUNDED-----		
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1998:	NON-PROFI	RES	One-time	0.00	1.00
	FED-OTHER	RES	One-time	15.00	0.50
	ST-LOCAL	RES	One-time	10.00	0.50
	NON-PROFI	RES	One-time	18.00	0.00
			-----		
			Subtotal:	43.00	2.00

Last Update: 01/27/98  
Initial Proposal: 1995

Project Statement

BUFF-N-419.002  
Priority: 999  
Page Num: 0267

		Total:	=====	
			43.00	2.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	Recurring	13.00	0.00
Year 2:	RES	Recurring	13.00	0.00
Year 3:	RES	Recurring	13.00	0.00
Year 4:	RES	Recurring	13.00	0.00
		Total:	=====	
			52.00	0.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)  
DOC (COVERED BY ANOTHER DOC)

Explanation: 516 DM6 APP. 7.4 E(6)

Last Update: 01/27/98  
Initial Proposal: 1993

Project Statement

BUFF-N-419.003  
Priority: 5  
Page Num: 0268

Title : IMPLEMENT FISHERIES MANAGEMENT PROGRAM  
Sub-title: FISHERIES BIOLOGIST STAFF

Funding Status: Funded: 3.50 Unfunded: 82.50

Servicewide Issues : N19 (CONSUMPT USE)  
N00 (FISHERIES)  
Cultural Resource Type:  
N-RMAP Program codes : W00 (Wildlife Management)  
W08 (Fisheries Management)

10-238 Package Number : 238

Problem Statement

The need for a fisheries management program has been documented in Park correspondence since 1979. The final Master Plan (1977) for Buffalo National River calls for a cooperative effort with the Arkansas Game and Fish Commission to develop a fishery program.

Additionally the recent Operations Evaluation and assessment by an NPS Fisheries Biologist documented the need for a full time Fisheries Biologist.

Water recreation is the Park's primary visitor use with fishing second only to canoeing as an activity. In 1981, 33,000 anglers visited BUFF and 57% were local residents. While the Buffalo is one of the leading smallmouth areas in the State, little is known of the trends in recreational fishing pressure and the resulting effects on the resources. Controversy between State fish stocking management practices and NPS Policy, lack of current data on the impact of recreational fishing, limited ecological data, and the need to provide clear management direction all support the concern for a comprehensive Fisheries Management Plan. A study by the U.S. Fish and Wildlife Service Cooperative Research Unit at the University of Arkansas indicates that cold water releases from a dam on the White River, upstream from its confluence with the Buffalo, may be having significant effects on the movement of native fish into the Buffalo from the White.

Description of Recommended Project or Activity

Establish a Fisheries Biologist position for Buffalo National River (see CR-MAP (BUFF-N-100.001) for funding and FTE information related to this position). Develop and implement catfish stocking plan. Initiate creel census.

Implement the approved Fisheries Management Plan which provides



Last Update: 01/27/98  
Initial Proposal: 1993

Project Statement

BUFF-N-419.003  
Priority: 5  
Page Num: 0269

the following broad Goals:

- 1) Seek to preserve and restore natural ecosystem functions;
- 2) Provide angling experiences for native species;
- 3) Stress coordination with State, Federal, and private sector.

The Park's current strategy is based on recent research and monitoring by the National Biological Survey, Cooperative Research Unit within the University of Arkansas, Fayetteville. They examined the most controversial issue, catfish stocking. Studies demonstrated that recent stocking efforts by the state of Arkansas (halted at NPS request in 1989) to enhance a put-and-take fishery was largely ineffective and that native catfish were declining and may disappear from the river due to thermal differances with the now dammed White River at its confluence.

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1993:	RG-RM-NAT	ADM	One-time	3.50	0.10
Total:				3.50	0.10
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		MON	Cyclic	10.00	0.10
		RES	One-time	7.50	0.00
		MON	Cyclic	20.00	0.20
Subtotal:				37.50	0.30
Year 2:		RES	One-time	25.00	0.20
		MON	Cyclic	10.00	0.10
Subtotal:				35.00	0.30
Year 3:		MON	Cyclic	10.00	0.10
Total:				82.50	0.70

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

	Project Statement	BUFF-N-419.003
Last Update: 01/27/98		Priority: 5
Initial Proposal: 1993		Page Num: 0270

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 App. 7.4 E(2)

Project Statement  
Last Update: 01/15/98  
Initial Proposal: 1994

BUFF-N-420.000  
Priority: 12  
Page Num: 0271

Title : SURVEY STATUS OF HERPETO-FAUNA RESOURCE

Funding Status: Funded: 2.50 Unfunded: 50.00

Servicewide Issues : N20 (BASELINE DATA)  
N02 (T&E ANIMAL)  
Cultural Resource Type:  
N-RMAP Program codes : W00 (Wildlife Management)  
W01 (Native Terrestrial Animal  
Management & Monitoring)

10-238 Package Number :

#### Problem Statement

Information of the status of amphibians and reptiles within Buffalo National River is inadequate. Most of the information available on the possible occurrence of these species is in the form of range maps found in field guides for the Eastern and Central United States and the State of Missouri. A species which has been documented in the National River (i.e. the alligator snapping turtle) is being reviewed by the U.S. Fish and Wildlife Service (as a Category species) to determine whether they should be listed under the Endangered Species Act. Very little concerning its status on the Buffalo River is known.

#### Description of Recommended Project or Activity

Conduct a survey of the National River to determine the species of reptiles and amphibians present to develop a base-line inventory. The survey should provide both a qualitative and quantitative record to which subsequent monitoring can be compared. Special emphasis will be placed on determining the status of the alligator snapping turtle on the Buffalo River.

Based upon the findings of this initial survey an ongoing herptological monitoring program should be developed and implemented.

#### BUDGET AND FTEs:

		-----FUNDED-----			
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1994:	PKBASE-NR	RES	One-time	2.50	0.10

Last Update: 01/15/98  
Initial Proposal: 1994

Project Statement

BUFF-N-420.000  
Priority: 12  
Page Num: 0272

		=====		
Total:		2.50	0.10	
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	25.00	0.00
Year 2:	RES	One-time	25.00	0.00
		=====		
Total:		50.00	0.00	

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 App. 2, 1.6

Last Update: 03/23/95  
Initial Proposal: 1994

Project Statement

BUFF-N-421.000  
Priority: 999  
Page Num: 0273

Title : MONITOR WILD TURKEY POPULATION

Funding Status: Funded: 0.00 Unfunded: 16.00

Servicewide Issues : N20 (BASELINE DATA)  
Cultural Resource Type:  
N-RMAP Program codes : W00 (Wildlife Management)  
W01 (Native Terrestrial Animal  
Management & Monitoring)

10-238 Package Number :

Problem Statement

During the 1940s, hunting pressure and the decline of suitable habitat wiped out existing native turkey populations. In 1970, a reintroduction program was initiated by the Arkansas Game and Fish Commission with the stocking of areas around Richland Creek, Buffalo Wildlife Management Area, etc. This stocking effort continued as late as 1986, when 17 birds were released in the Ponca Wilderness. While harvest data in Newton County points to a successful restoration, little is known of the populations within Buffalo National River except for limited data from the Lower Buffalo. A cooperative effort needs to be developed with the Arkansas Game and Fish Commission to determine the abundance and distribution within all units of the National River.

Such an effort would coincide with the Turkey Management Plan being developed by the Game and Fish Commission and would help to identify deficiencies in existing populations.

Description of Recommended Project or Activity

A cooperative effort with the Arkansas Game and Fish Commission for all districts of the National River needs to be developed. Such an effort would include recording and observation of all birds sighted during the June-August Brood survey and the establishment of 10-12 permanent circuits within each district for gobbler counts.

Last Update: 03/23/95  
Initial Proposal: 1994

Project Statement

BUFF-N-421.000  
Priority: 999  
Page Num: 0274

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MON	Recurring	4.00	0.10
Year 2:	MON	Recurring	4.00	0.10
Year 3:	MON	Recurring	4.00	0.10
Year 4:	MON	Recurring	4.00	0.10
Total:			=====	=====
			16.00	0.40

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 App. 7.4 E(2)

	Project Statement	BUFF-N-422.002
Last Update: 03/23/95		Priority: 11
Initial Proposal: 1994		Page Num: 0275

Title : NEOTROPICAL MIGRATORY BIRD RESEARCH  
 Sub-title: POPULATION/HABITAT STUDY

Funding Status: Funded: 0.00 Unfunded: 25.00

Servicewide Issues : N20 (BASELINE DATA)  
                               N02 (T&E ANIMAL)  
 Cultural Resource Type:  
 N-RMAP Program codes : W00 (Wildlife Management)  
                               W01 (Native Terrestrial Animal  
   Management & Monitoring)

10-238 Package Number :

#### Problem Statement

The abundance, distribution, and habitat utilization of neotropical migratory birds at Buffalo National River falls within the Ozark-Ouachita Plateau section of the Southeast physiographic region; estimates of species diversity within the region exceed one hundred. Many of these populations are known to be declining. Without information regarding the population status and habitat use, park management is unable to make informed decisions to mitigate for neotropical migratory birds.

#### Description of Recommended Project or Activity

Following the completion of a baseline inventory, conduct a study to delineate population status and trends, habitat associations, and habitat status and trends. The results of the study will identify limiting factors for each species of neotropical migrant present within Buffalo National River.

#### BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	8.00	0.10
Year 2:	RES	One-time	8.00	0.10

Last Update: 03/23/95  
Initial Proposal: 1994

Project Statement

BUFF-N-422.002  
Priority: 11  
Page Num: 0276

Year 3:	RES	One-time	9.00	0.10
		Total:	=====	
			25.00	0.30

(Optional) Alternative Actions/Solutions and Impacts

N/A

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 App. 2, 1.6



Last Update: 01/29/98  
Initial Proposal: 1992

# Project Statement

BUFF-N-510.001  
Priority: 7  
Page Num: 0277

Title : CAVE MANAGEMENT  
Sub-title: MAPPING AND INVENTORY

Funding Status: Funded: 0.00 Unfunded: 60.00

Servicewide Issues : N20 (BASELINE DATA)  
N02 (T&E ANIMAL)

Cultural Resource Type:

N-RMAP Program codes : G00 (Geologic Resources Management)  
G01 (Cave Management)

10-238 Package Number :

## Problem Statement

The 1988 Federal Cave Resource Protection Act mandates that federal agencies inventory caves on federal land. Buffalo National River has over 270 inventoried caves. Only 52 of these have ever been mapped, and 98 others have only a rough map with minimal information. Without accurate maps of these caves it is difficult to inventory their resources spatially. Many of these caves have not been monitored since the initial cave resources inventory in the late 1970s. The estimated length of unsurveyed or poorly surveyed known caves in the park is over 4.5 miles. There probably exist another 100 caves which have never been inventoried. These caves need to be mapped and inventoried so that informed decisions can be made for their management.

## Description of Recommended Project or Activity

Develop cave survey and inventory standards, and establish agreements with caving organizations and individuals to carry out the work to these standards. Establish a temporary position to assist with these projects, to coordinate quality control of the mapping and inventory work, and to put this data in digital format. A GIS theme for karst data should also be developed.

## BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00

Last Update: 01/29/98  
Initial Proposal: 1992

Project Statement

BUFF-N-510.001  
Priority: 7  
Page Num: 0278

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MON	Recurring	15.00	0.20
Year 2:	MON	Recurring	15.00	0.20
Year 3:	MON	Recurring	15.00	0.20
Year 4:	MON	Recurring	15.00	0.20
Total:			60.00	0.80

(Optional) Alternative Actions/Solutions and Impacts

Continue with the same inventory system. Survey and inventory standards are not set and are often low. Very little spatial data is aquired for each cave. Very little data is acquired on biological populations, archeological resources, and speleothems as they relate to the cave geometry. Very little data is obtained for use in a cave GIS, and the data that is obtained is not checked for validity.

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 7.4 E(2)

	Project Statement	BUFF-N-510.002
Last Update: 01/29/98		Priority: 10
Initial Proposal: 1992		Page Num: 0279

Title : CAVE MANAGEMENT  
 Sub-title: IMPACT MONITORING

Funding Status: Funded: 0.00 Unfunded: 60.00

Servicewide Issues : N21 (CAVE RESOURCES)  
                           C19 (SPEC STUDY)  
 Cultural Resource Type:  
 N-RMAP Program codes : G00 (Geologic Resources Management)  
                           G01 (Cave Management)

10-238 Package Number :

### Problem Statement

Thirty of the caves at Buffalo National River have either endangered species, cultural resources, or pristine to near pristine speleothems of a quantity or type which makes them very susceptible to damage by careless visitors. Most of these caves are in the backcountry and visitation is unregulated. The long thin geometry of the park and the seclusion of these caves means many get used by visitors who have had little or no contact with park staff. Most of these caves are visited only infrequently by park staff. Many of these caves are damaged by either careless users, or vandalism. A reproduceable method of monitoring these caves for change over time needs to be established.

### Description of Recommended Project or Activity

A standardized monitoring program tied to large scale maps and photographs of the cave will be developed. The monitoring program will be designed to give both qualitative and quantitative measurements of visitor impacts. Impacts will be related to visitor use to determine points of action. This action will not prevent damage from occurring, but it will allow managers to see the trend, and take proactive measures to prevent further damage.

### BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00

Last Update: 01/29/98  
Initial Proposal: 1992

Project Statement

BUFF-N-510.002  
Priority: 10  
Page Num: 0280

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MON	Recurring	15.00	0.20
Year 2:	MON	Recurring	15.00	0.20
Year 3:	MON	Recurring	15.00	0.20
Year 4:	MON	Recurring	15.00	0.20
Total:			=====	=====
			60.00	0.80

(Optional) Alternative Actions/Solutions and Impacts

Continue haphazard monitoring. This will result in great lag times between damage occurrence and recognition of the problem. Managers will not have good data to determine when the damage occurred, or at what use level this damage shows. The management of the caves will be ineffective and be essentially kneejerk reactions. The caves will be managed from one crisis to another.

Compliance codes :

Explanation:

Last Update: 01/29/98  
Initial Proposal: 1992

# Project Statement

BUFF-N-510.003  
Priority: 999  
Page Num: 0281

Title : CAVE MANAGEMENT  
Sub-title: VISITOR CONTACT AND INFO

Funding Status: Funded: 0.00 Unfunded: 31.00

Servicewide Issues : N21 (CAVE RESOURCES)  
N18 (VIS USE-BCTRY)  
Cultural Resource Type:  
N-RMAP Program codes : N00 (Resource and Visitor Use  
Management)  
N01 (Control of Poaching and Theft of  
Natural Resources)

10-238 Package Number :

## Problem Statement

Several of the caves at Buffalo National River receive fairly high use on the weekends. Many of these caves contain either hazardous points, or pristine formations. The types, sizes, experience levels, and expectations of the groups who use these caves is poorly known. This lack of understanding is nearly a direct result of lack of contact with these groups. The resulting lack of understanding makes it difficult to make informed management decisions regarding these caves.

## Description of Recommended Project or Activity

A contact and information dissemination system needs to be established at these high use caves. This system could consist of any combination of cave registers and educational pamphlets, ranger patrols in these caves, signs, or cave conservation and safety workshops. This action would help us get voluntary compliance with regulations, and would go along way to reduce the cave damage, and caver injuries. This action would require either greater staffing/funding, more volunteers, or the installation and maintenance of cave registers.

## BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00

Last Update: 01/29/98  
Initial Proposal: 1992

Project Statement

BUFF-N-510.003  
Priority: 999  
Page Num: 0282

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MON	Recurring	10.00	0.50
Year 2:	MON	Recurring	7.00	0.30
Year 3:	MON	Recurring	7.00	0.30
Year 4:	MON	Recurring	7.00	0.30
Total:			=====	=====
			31.00	1.40

(Optional) Alternative Actions/Solutions and Impacts

Continue trying to manage the caves without the knowledge of types of groups visiting them. Make decisions based on gut feelings and instincts. This could have an effect of alienating many of the users as they weren't asked how they feel about changes. The rapid increase in the popularity of caving will surely turn this status quo management into crisis management

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

Project Statement  
Last Update: 01/29/98  
Initial Proposal: 1992

BUFF-N-511.000  
Priority: 0  
Page Num: 0283

Title : FITTON CAVE MANAGEMENT

Funding Status: Funded: 35.00 Unfunded: 0.00

Servicewide Issues : N21 (CAVE RESOURCES)  
N18 (VIS USE-BCTRY)  
Cultural Resource Type:  
N-RMAP Program codes : G00 (Geologic Resources Management)  
G01 (Cave Management)

10-238 Package Number :

#### Problem Statement

Fitton Cave is believed to be the largest cave within the state of Arkansas. Because of its size and content, the cave has always been a popular recreational cave, even before the NPS acquired it. Unfortunately, some of this use resulted in substantial damage to the cave through negligence, carelessness and vandalism. A management plan for Fitton Cave was completed and approved in 1983, but several key components remain to be accomplished. The plan lists several objectives; 1) protect, conserve and preserve the natural cave system, 2) restore cave resources impacted by human use, where possible, 3) provide opportunities for recreational use and scientific study. The basic program elements are; 1) conduct survey and produce detailed map, 2) a comprehensive research and monitoring program, 3) restoration, 4) managed recreational use.

The mapping project being conducted by the Cave Research Foundation, while 90% completed, is progressing slowly. The research and monitoring programs have been hampered by a lack of interest in volunteer projects and NPS funding and personnel (see PS N-512). Major restoration and cave clean-up has been completed. Programs to monitor the condition of cave resources impacted by recreational use are incomplete. Recreational use is managed through a permit system which limits the size and number of groups using the cave per day. Demand for permits has remained consistent since the start of the program with approximately 1,000 people visiting the cave each year.

Problems with the permit program include continued incidents of disregard for cave conservation practices and regulations (i.e. smoking, disposing of waste, marking cave with directional arrows) by recreational users. Turnover within the NPS Ranger staff often leaves the park with few if any personnel capable of conducting routine patrols of the cave.

	Project Statement	BUFF-N-511.000
Last Update: 01/29/98		Priority: 0
Initial Proposal: 1992		Page Num: 0284

# Description of Recommended Project or Activity

Continue management direction established in the Fitton Cave Management Plan. Undertake a major review and revision of the plan by the end of 1993. Revisions of the plan should include development of detailed strategies for monitoring impact of recreational use and establishing resource indicators and measurable standards using the LAC planning process.

Establish a cave management coordinator position on the Natural Resource staff. This position should devote .5 FTE to cave management responsibilities encompassing all BNR caves, including Fitton.

## BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1992:	PKBASE-NR	ADM	Recurring	5.00	0.20
1993:	PKBASE-NR	ADM	Recurring	5.00	0.20
1994:	PKBASE-NR	ADM	Recurring	5.00	0.20
1995:	PKBASE-NR	ADM	Recurring	5.00	0.20
1996:	PKBASE-NR	ADM	Recurring	5.00	0.20
1997:	PKBASE-NR	ADM	Recurring	5.00	0.20
1998:	PKBASE-NR	ADM	Recurring	5.00	0.20
Total:				35.00	1.40
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Total:				0.00	0.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B





	Project Statement	BUFF-N-512.000
Last Update: 01/29/98		Priority: 9
Initial Proposal: 1994		Page Num: 0285

Title : CAVE RESEARCH

Funding Status: Funded: 0.00 Unfunded: 40.00

Servicewide Issues : N20 (BASELINE DATA)  
Cultural Resource Type:  
N-RMAP Program codes : G00 (Geologic Resources Management)  
G01 (Cave Management)

10-238 Package Number :

#### Problem Statement

Buffalo National River has 271 inventoried caves ranging from less than 100 feet to several miles long. A couple of these have received in-depth studies, mostly of their biological and archeological resources. The Fitton Cave Management plan calls for a detailed map, and a hydrologic study to determine the recharge area of the cave to be performed. The map is not yet complete, but the hydrologic study has been recently completed. The park has research grade maps for less than one half of the caves. The Cave Research Foundation has been lightly supported in the past, both with materials and manpower. Further research into the caves could provide information on the regional climatic and geologic regimes which operated during the Pleistocene. Researchers might also turn up new microbe and animal species, and speleothems. Because it is difficult to manage resources which are unknown, or poorly understood, cave research is necessary at Buffalo National River.

#### Description of Recommended Project or Activity

Establish firmer ties with Cave Research Foundation and other cave research/mapping organizations. Establish ties with universities which can provide a pool of graduate students interested in cave studies. Assistance should be requested from the MWRO Science Office for funding research. Special emphasis should be given to projects involving Fitton Cave mapping, geology, mineralogy, biology, and sedimentology. Several other caves such as John Eddings, which probably gets most of its recharge outside of the park, should receive thorough studies of their biology and recharge.

Last Update: 01/29/98  
Initial Proposal: 1994

Project Statement

BUFF-N-512.000  
Priority: 9  
Page Num: 0286

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	RES	One-time	10.00	0.00
Year 2:	RES	One-time	10.00	0.00
Year 3:	RES	One-time	10.00	0.00
Year 4:	RES	One-time	10.00	0.00
			=====	=====
Total:			40.00	0.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 App. 2, 1.6

Last Update: 03/23/95  
Initial Proposal: 1994

Project Statement

BUFF-N-520.000  
Priority: 999  
Page Num: 0287

Title : PALEONTOLOGY RESOURCES

Funding Status: Funded: 0.00 Unfunded: 24.00

Servicewide Issues : N20 (BASELINE DATA)  
N23 (PALEONTOLOGY)

Cultural Resource Type:

N-RMAP Program codes : G00 (Geologic Resources Management)  
G02 (Mining and Minerals Management)

10-238 Package Number :

Problem Statement

The geologic formations outcropping at Buffalo National River range in age from Ordovician to Pennsylvanian (a period of up to 200 million years), with a fairly thin mantle of Quaternary age deposits. Fossils, mostly invertebrates, tend to be fairly evenly distributed in those Paleozoic formations which contain fossils. Sometimes, the depositional environment was such that large concentrations of high quality fossils were preserved in a small area. Quaternary fossils are usually associated with sinkholes (ie. Conard Fissure) and caves. These tend to be mostly vertebrates.

At present, we have very little information on locations of exemplary fossil occurrences. While this is not a problem by itself, it becomes important when collecting is taking place at these locations.

Description of Recommended Project or Activity

The park should seek funding to contract with a researcher to investigate fossil concentrations in the park. This research should include a literature review, communication with local geologists, and field characterization of the sites. Ideally, this characterization should include genera of the fossils present, size of concentration, and relative quality of the deposit.

Assess the effects of illegal collecting of paleontological resources on BNR.

Last Update: 03/23/95  
Initial Proposal: 1994

Project Statement

BUFF-N-520.000  
Priority: 999  
Page Num: 0288

BUDGET AND FTEs:

Source		Activity	Fund Type	Budget (\$1000s)	FTEs
			Total:	0.00	0.00

		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		RES	One-time	8.00	0.00
Year 2:		RES	One-time	8.00	0.00
Year 3:		RES	One-time	8.00	0.00
			Total:	24.00	0.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 App. 2, 1.6

Last Update: 01/27/98  
Initial Proposal: 1992

Project Statement

BUFF-N-610.000  
Priority: 0  
Page Num: 0289

Title : AIR QUALITY MONITORING

Funding Status: Funded: 40.00 Unfunded: 0.00

Servicewide Issues : N14 (AIR POLLUTION)  
N20 (BASELINE DATA)

Cultural Resource Type:  
N-RMAP Program codes : A00 (Air Resources Management)  
A02 (Air Quality Monitoring)

10-238 Package Number :

Problem Statement

Buffalo National River is a Class II "floor area" in terms of the Clean Air Act's "prevention of significant deterioration" requirements. Air quality monitoring since 1982 at Buffalo National River (at Buffalo Point in Marion County) indicates that pH of the rainfall is on a downward trend, and the conductivity is going up. The monitoring equipment consists of an NADP (National Atmospheric Deposition Program) precipitation sampler and rainguage, and an ADPC&E (Arkansas Department of Pollution Control and Ecology) precipitation sampler and raingauge, and an ADPC&E PM10 particulate sampler. Continuation of this monitoring is necessary to provide baseline data to corroborate with other research efforts concerning vegetation and aquatic communities.

The Upper Buffalo Wilderness Area on the Ozark National Forest is a Class 1 airshed under the "prevention of significant deterioration" (PSD) provisions of the Clean Air Act. PSD addresses resource protection through the establishment of ceilings on additional amounts of air pollution over base-line levels in "clean" air areas, and additional protection for the visibility values. The U.S. Forest Service has operated a visibility camera in the area since 1989, an IMPROVE (particulate sampler) since 1992, and a nephelometer since 1993. The ADPCE has maintained an ozone monitor at Deer, Arkansas (approximately 25 miles from the Ponca Wilderness Unit of BNR) since 1993.

Description of Recommended Project or Activity

Continue current monitoring actions, with the exception of the visibility camera. Equipment upkeep is paid for by the benefitting agencies, but the largest share of the expense is the weekly operation of the system, and vehicle support. Future operation of the monitoring equipment could require additional funding for manpower.

The NPS should support and encourage the continued air quality

Last Update: 01/27/98  
Initial Proposal: 1992

Project Statement

BUFF-N-610.000  
Priority: 0  
Page Num: 0290

monitoring on the part of the state of Arkansas and the U.S.  
Forest Service.

BUDGET AND FTEs:

		-----FUNDED-----			
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1992:	PKBASE-NR	MON	Recurring	5.00	0.10
1993:	PKBASE-NR	MON	Recurring	5.00	0.10
1994:	PKBASE-NR	MON	Recurring	5.00	0.10
1995:	PKBASE-NR	MON	Recurring	5.00	0.10
1996:	PKBASE-NR	MON	Recurring	5.00	0.10
1997:	PKBASE-NR	MON	Recurring	5.00	0.10
1998:	PKBASE-NR	MON	Recurring	5.00	0.10
1999:	PKBASE-NR	MON	Recurring	5.00	0.10
Total:				===== 40.00	0.80

		-----UNFUNDED-----			
		Activity	Fund Type	Budget (\$1000s)	FTEs
Total:				===== 0.00	0.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 App. 2, 1.6

Last Update: 01/29/98  
Initial Proposal: 1992

# Project Statement

BUFF-N-710.001  
Priority: 0  
Page Num: 0291

Title : CONTROL EXOTIC SPECIES/VEGETATION  
Sub-title: KUDZU

Funding Status: Funded: 17.80 Unfunded: 0.00

Servicewide Issues : N05 (NON-NAT PLANTS)  
Cultural Resource Type:  
N-RMAP Program codes : V00 (Vegetation Management)  
V04 (Exotic Plant Management)

10-238 Package Number :

## Problem Statement

A large number of exotic plant species occur within the National River. Most are associated with disturbed areas such as homesites and agricultural areas. Kudzu is an introduced woody vine originally used for erosion control. It can rapidly grow into and over forest vegetation resulting in the death of trees over a large area. Control is both difficult and expensive. Fortunately kudzu has only been found at a few locations on the National River and control is feasible. Control efforts on the National River began in 1979 and have continued every year since. The number of sites in which kudzu is still found has declined to three. These three sites are the largest and have been the most difficult to eradicate.

## Description of Recommended Project or Activity

All locations where kudzu is known to occur are monitored annually. Depending upon the status of each site a control program is developed for the coming year. Control strategies include mechanical, herbicide application and the use of prescribed fire. Fire is used to reduce the overall amount of kudzu present (especially in trees) so that the amount of herbicide (Roundup) applied is minimized. Herbicide application includes both foliar and cut-stump treatments.

## BUDGET AND FTEs:

-----FUNDING-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs



Last Update: 01/29/98  
Initial Proposal: 1992

# Project Statement

BUFF-N-710.001  
Priority: 0  
Page Num: 0292

1992:	PKBASE-NR MIT	Recurring	1.50	0.10
	PKBASE-NR MON	Recurring	0.50	0.10
	RG-RM-NAT MIT	Recurring	0.60	0.00
		Subtotal:	2.60	0.20
1993:	PKBASE-NR MIT	Recurring	1.50	0.10
	PKBASE-NR MON	Recurring	0.50	0.10
		Subtotal:	2.00	0.20
1994:	PKBASE-NR MIT	Recurring	1.50	0.10
	PKBASE-NR MON	Recurring	0.50	0.10
	RG-NS-RES MIT	One-time	1.20	0.00
		Subtotal:	3.20	0.20
1995:	PKBASE-NR MIT	Recurring	1.50	0.10
	PKBASE-NR MON	Recurring	0.50	0.10
		Subtotal:	2.00	0.20
1996:	PKBASE-NR MIT	Recurring	1.50	0.10
	PKBASE-NR MON	Recurring	0.50	0.10
		Subtotal:	2.00	0.20
1997:	PKBASE-NR MIT	Recurring	1.50	0.10
	PKBASE-NR MON	Recurring	0.50	0.10
		Subtotal:	2.00	0.20
1998:	PKBASE-NR MIT	Recurring	1.50	0.10
	PKBASE-NR MON	Recurring	0.50	0.10
		Subtotal:	2.00	0.20
1999:	PKBASE-NR MIT	Recurring	1.50	0.10
	PKBASE-NR MON	Recurring	0.50	0.10
		Subtotal:	2.00	0.20
		Total:	17.80	1.60

-----UNFUNDED-----			
Activity	Fund Type	Budget (\$1000s)	FTEs
		0.00	0.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Last Update: 01/29/98  
Initial Proposal: 1992

Project Statement

BUFF-N-710.001  
Priority: 0  
Page Num: 0293

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 E(7)

Project Statement  
Last Update: 01/29/98  
Initial Proposal: 1994

BUFF-N-710.002  
Priority: 19  
Page Num: 0294

Title : CONTROL EXOTIC SPECIES/VEGETATION  
Sub-title: MIMOSA

Funding Status: Funded: 51.80 Unfunded: 26.00

Servicewide Issues : N05 (NON-NAT PLANTS)  
Cultural Resource Type:  
N-RMAP Program codes : V00 (Vegetation Management)  
V04 (Exotic Plant Management)

10-238 Package Number :

### Problem Statement

The impact of Mimosa on disturbed lands within BUFF and its control is a GPRA goal for the park.

Mimosa is an escaped cultivated ornamental tree which is widespread on the National River. It is commonly found around old home sites, along road sides and riparian areas. It is common along some parts of the river where it grows below the mean high water level on gravel bars. On some tributaries it has become the dominant vegetation on gravel bars, apparently having supplanted the native sycamore, willow and witch hazel. Its distribution along the river is not well documented nor is its current rate of spread into new areas.

Informal observation indicates that the highest density of riparian mimosa is found along the upper river, principally Boxley Valley. This density decreases gradually downstream to the point that it only found in widely scattered locations on the middle and lower river. It is currently widespread along the river banks within the Ponca Wilderness Area. Its potential to displace native species and the resultant impact on riparian dependent species is not known.

### Description of Recommended Project or Activity

Conduct a survey of the river to document the current distribution of Mimosa river-wide and determine its reproductive success (% of young vs. old trees). The survey will require a seasonal employee to cover the river by boat and accurately map the extent of mimosa distribution and sample the size classes; establish photo points of areas where mimosa is already well established and areas where it is only found currently in the form of seedlings; and survey the literature for previous research on control methods and impact on native plants and animals.

Control 35 acres of disturbed lands impacted by Minosa over a

Last Update: 01/29/98  
Initial Proposal: 1994

# Project Statement

BUFF-N-710.002  
Priority: 19  
Page Num: 0295

five year period starting in 1998 as part of the park GPRA goals.

## BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1995:	RG-RM-NAT	MIT	Recurring	0.60	0.01
1996:	RG-RM-NAT	MIT	Recurring	0.60	0.01
1997:	RG-RM-NAT	MIT	Recurring	0.60	0.01
1998:	PKBASE-NR	MIT	Recurring	10.00	0.30
1999:	PKBASE-NR	MIT	Recurring	10.00	0.30
2000:	PKBASE-NR	MIT	Recurring	10.00	0.30
2001:	PKBASE-NR	MIT	Recurring	10.00	0.30
2002:	PKBASE-NR	MIT	Recurring	10.00	0.30
Total:				=====	=====
				51.80	1.53
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		RES	Recurring	4.00	0.20
Year 2:		MIT	Recurring	2.00	0.10
Year 3:		MIT	Recurring	10.00	0.50
Year 4:		MIT	Recurring	10.00	0.50
Total:				=====	=====
				26.00	1.30

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM 6 APP. 7.4 E(7)

Project Statement  
Last Update: 01/15/98  
Initial Proposal: 1994

BUFF-N-720.001  
Priority: 999  
Page Num: 0296

Title : CONTROL EXOTIC SPECIES/ANIMAL  
Sub-title: FERAL SWINE

Funding Status: Funded: 0.00 Unfunded: 160.00

Servicewide Issues : N04 (NON-NAT ANIMAL)  
Cultural Resource Type:  
N-RMAP Program codes : W00 (Wildlife Management)  
W05 (Exotic Animal Management)

10-238 Package Number :

### Problem Statement

In 1984, approximately twelve swine were released illegally released in the Upper Buffalo Wilderness Area on the Ozark National Forest. The released swine have been described as "European Boars" and sightings of adults and their offspring in the area have been common ever since. The area is directly adjacent to and upstream from the National River. Two reports of these feral hogs within the National River were made in late 1989 and early 1990. Foot surveys and observation of bait stations in the winter of 1990 documented only one feral swine sighting (track) within the National River. In January 1990, NPS personnel observed one feral swine on National Forest land one mile from the National River boundary.

In the summer of 1989 numerous sightings were made of feral swine along the river in the Lower Buffalo Wilderness Unit. These animals appeared to have many domestic characteristics and were thought to have been the result of a recent intentional release. By 1990 no further sightings were made and it is believed that all of the animals were eliminated during the deer hunting season. In the same area in 1990 personnel from the U.S. Forest Service (USFS) and Arkansas Game and Fish Comm. (AG&FC) prevented the release of a truck load of hogs on the Sylamore District of the Ozark National Forest. During 1995-96 local contacts indicate the release of a cattle truck load of hogs at Red Star in the Ozark National Forest. Since that time pig sightings appear to be increasing.

In all cases private citizens released swine in the hope of establishing a huntable population in the area. The AG&FC opposes such releases but is unable to take direct action since state law classifies feral swine as lost livestock over which they have no jurisdiction. The USFS has no program to remove the feral swine in the Upper Buffalo Wilderness Area. Any feral swine program will be complicated by the inaccessibility of the wilderness areas.

	Project Statement	BUFF-N-720.001
Last Update: 01/15/98		Priority: 999
Initial Proposal: 1994		Page Num: 0297

Description of Recommended Project or Activity

The park lacks data on pig impacts to park resources, approximate number of pigs within BUFF, and a strategy to mitigate this issue. The park will attempt to monitor pig impacts, quantify numbers, and develop strategies.

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MIT	Recurring	40.00	2.00
Year 2:	MIT	Recurring	40.00	2.00
Year 3:	MIT	Recurring	40.00	2.00
Year 4:	MIT	Recurring	40.00	2.00
			=====	
Total:			160.00	8.00

(Optional) Alternative Actions/Solutions and Impacts

NA

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 App. 2, 1.6

Last Update: 03/27/95  
Initial Proposal: 1994

## Project Statement

BUFF-N-810.000  
Priority: 6  
Page Num: 0298

Title : DEVELOP GEOGRAPHIC INFORMATION SYSTEM

Funding Status: Funded: 0.00 Unfunded: 270.00

Servicewide Issues : N20 (BASELINE DATA)  
Cultural Resource Type:  
N-RMAP Program codes : C00 (Collections and Data Management)  
C03 (GIS/Data Management)

10-238 Package Number :

## Problem Statement

Buffalo National River currently uses six mylar overlays of the resource base maps. Several themes are available including roads, trails, park boundary, soils, fire history, vegetation, caves, archeological sites, and land-use status. Some of these themes are already digitized and available from USGS, SCS, and The Arkansas Archeological Survey or have been digitized from base maps supplied to the Survey by the park. The park lacks a GRASS-based GIS and dedicated FTE at the park level. While such a system will be available at the University of Missouri through a combined effort of the Global Climate Change Program and SWRO Science office the park still needs a full time position devoted to systems operation beyond GCC. To allow for data manipulation at the park level, acquisition of a GIS program called Environmental Planning and Program Language (EPPL) and associated hardware has been accomplished. While EPPL has limited analytical capabilities it will provide the park with access to a working GIS until such time as the program's abilities are exceeded.

## Description of Recommended Project or Activity

Request assistance from GIS Division and the Regional Science Office to acquire the following:

- 1) A full time systems operator.
- 2) Existing digitized information;
- 3) Define the scale of each theme of the resource base inventory which would best serve park management;
- 4) Provide funding to digitize additional themes or revise existing themes;

The Park now has an approved GIS Plan which documents the need for Regional assistance in data aquisition, FTE, and \$ to support the GIS program at BUFF.

Last Update: 03/27/95  
Initial Proposal: 1994

Project Statement

BUFF-N-810.000  
Priority: 6  
Page Num: 0299

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	ADM	One-time	120.00	1.00
Year 2:	ADM	Recurring	50.00	1.00
Year 3:	ADM	Recurring	50.00	1.00
Year 4:	ADM	Recurring	50.00	1.00
Total:			=====	=====
			270.00	4.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 App. 2, 1-7



Last Update: 03/23/95  
Initial Proposal: 1994

## Project Statement

BUFF-N-820.000  
Priority: 999  
Page Num: 0300

Title : DEVELOP RESEARCH FACILITIES

Funding Status: Funded: 0.00 Unfunded: 40.00

Servicewide Issues : N17 (BIODIVERSITY)  
N20 (BASELINE DATA)

Cultural Resource Type:

N-RMAP Program codes : S00 (Science Consultation and Oversight)

10-238 Package Number : 238

## Problem Statement

Buffalo National River in conjunction with Ozark Scenic Riverways is a partnership under the Global Climate Change Research Program for the Ozark Highlands. Buffalo is in a unique and sensitive position to detect global change because of the projected pronounced effects on the midwestern U.S. Research efforts are already underway involving USF&WS Coop. Research Units, University of Arkansas, University of Missouri, and the USGS. While this program is attracting premier researchers from as far away as 700 miles, research facilities for these investigators are limited and offer little space devoted to analysis of field data. No dedicated field equipment such as boats, motors, vehicles, etc. are available without compromising the park's ability to carry on day-to-day operations. The number of research requests should increase dramatically as other programs such as MAB develop. The park should renovate existing facilities to accommodate limited research needs and supply equipment necessary to carry out basic investigations to encourage additional efforts by the research community.

## Description of Recommended Project or Activity

Utilize existing structure at Steel Creek to develop limited research facilities and provide access to data processing equipment, links to GIS, work tables, microscopes, storage containers, small reference library, etc. Also available to these researchers on a limited basis should be a vehicle, boat, motor, and associated equipment.

Last Update: 03/23/95  
Initial Proposal: 1994

Project Statement

BUFF-N-820.000  
Priority: 999  
Page Num: 0301

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	ADM	One-time	40.00	0.00
			=====	
Total:			40.00	0.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EA (ENV. ASSESSMENT)  
NHPA ((106) NAT. HIST. PRES.)

Explanation: Construct laboratory facilities

Last Update: 01/27/98  
Initial Proposal: 1994

## Project Statement

BUFF-N-911.000  
Priority: 0  
Page Num: 0302

Title : MONITOR BACKCOUNTRY CAMPSITE IMPACTS

Funding Status: Funded: 24.00 Unfunded: 0.00

Servicewide Issues : N18 (VIS USE-BCTRY)  
Cultural Resource Type:  
N-RMAP Program codes : N00 (Resource and Visitor Use  
Management)  
N02 (Backcountry and River Patrol)

10-238 Package Number :

## Problem Statement

Backcountry camping occurs on over 80% of Buffalo National River's 95,000 acres. Current management policies at BNR allow fairly unrestricted backcountry camping, without permits or designated sites. Backcountry campsites include a variety of settings and types of users. Much of the backcountry camping by river users occurs on relatively impact resistant gravel bar sites. Other campsite types include wooded locations used by hikers, stock, drive-in primitive car camping, and hunting camps. Campsite locations also vary from designated wilderness (36,000 acres) to areas with extensive road access and agricultural use.

Current management policies at BNR allow fairly unrestricted backcountry camping, without permits or designated sites. NPS Management Policies (1988) require that public use limits, established to protect resources, be based upon supporting data. Impacts on sites include trash, improper or excessive human waste disposal, soil compaction, trampled vegetation, trees and shrubs cut for fire wood, multiple fire rings, and development of numerous social trails. NPS management policies and guidelines (NPS-77) require park's to assemble baseline inventory data concerning the natural resources and monitor those resources at regular intervals to detect changes, "The National Park Service will identify acceptable limits of impacts, monitor backcountry use levels and resource conditions, and take prompt corrective action when unacceptable impacts occur" (Chapter 8:3).

In an effort to achieve these objectives, an inventory of backcountry campsites in 1991 identified over 60 sites in areas above the mean high-water level of the river. For each site inventory parameters (assessment date, location, type of use, distance to trails, water, and other sites, vegetative type and cover off-site) and impact parameters (site area, vegetative cover loss, tree damage, trash, human waste, fire sites, and bare soil) were recorded. The inventory results were recorded in the form of mapped locations, photo record and a computer data-base format.

Buffalo National River has developed indicators and standards for

Last Update: 01/27/98  
Initial Proposal: 1994

## Project Statement

BUFF-N-911.000  
Priority: 0  
Page Num: 0303

backcountry campsite conditions in its draft backcountry management plan. Reassessment of backcountry sites using the same parameters and adding previously unrecorded sites is needed to determine changes in site conditions, and the acceptability of impact levels in comparison to standards established in the BNR Wilderness and Backcountry Management Plan (draft, 1993).

## Description of Recommended Project or Activity

Implement a backcountry campsite condition monitoring program using the method outlined in NPS Natural Resources Report NPS/NRVT/NRR91/06 (Marion, 1991). The monitoring schedule will emphasize those sites which do not meet acceptable standards (established in approved backcountry management plan).

Sites which do not meet standards will be monitored annually.

Sites previously assessed as Condition Class 4 and 5 will be monitored every two years.

Sites previously assessed as Condition Class 1, 2, or 3 will be monitored every five years.

All wilderness sites will be monitored every three years.

The monitoring program will be conducted by the Natural Resource Specialist with assistance from SCA Resource Assistants.

## References

- Cole, David N. 1983. Monitoring the Condition of Wilderness Campsites. U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station. Research Paper INT-302. Ogden, Utah. 10 pp.
- Cole, David N. 1989. Wilderness campsite monitoring methods: a sourcebook. U.S. Department of Agriculture, Forest Service, Intermountain Forest Experiment Station. General Technical Report INT-259. Ogden, Utah. 57 pp.
- Marion, Jeffrey L. 1991. Developing a natural resource inventory and monitoring program for visitor impacts on recreation sites: aprocedural manual. U.S. Department of the Interior, National Park Service. Natural Resources Report NPS/NRVT/NRR-91/06. 59 pp.

Last Update: 01/27/98  
Initial Proposal: 1994

Project Statement

BUFF-N-911.000  
Priority: 0  
Page Num: 0304

BUDGET AND FTEs:

-----FUNDED-----					
	Source	Activity	Fund Type	Budget (\$1000s)	FTEs
1994:	PKBASE-NR	MON	Cyclic	3.00	0.10
1995:	PKBASE-NR	MON	Cyclic	3.00	0.10
1996:	PKBASE-NR	MON	Cyclic	3.00	0.10
1997:	PKBASE-NR	MON	Cyclic	3.00	0.10
1998:	PKBASE-NR	MON	Cyclic	3.00	0.10
1999:	PKBASE-NR	MON	Cyclic	3.00	0.10
2000:	PKBASE-NR	MON	Cyclic	3.00	0.10
2001:	PKBASE-NR	MON	Cyclic	3.00	0.10
Total:				24.00	0.80
-----UNFUNDED-----					
		Activity	Fund Type	Budget (\$1000s)	FTEs
Total:				0.00	0.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM2 APP. 2, 1.6

Project Statement  
Last Update: 03/27/95  
Initial Proposal: 1994

BUFF-N-920.000  
Priority: 15  
Page Num: 0305

Title : MONITOR RIVER USE

Funding Status: Funded: 0.00 Unfunded: 29.50

Servicewide Issues : N18 (VIS USE-BCTRY)  
Cultural Resource Type:  
N-RMAP Program codes : N00 (Resource and Visitor Use  
Management)

10-238 Package Number :

### Problem Statement

Buffalo National River's River Use Management Plan (RUMP), approved in 1983, established maximum levels of use for various segments of the river. These levels varied from low (up to 8 boats/mile) to high (over 20 boats/mile) in order to provide a diverse range of recreational experiences. Concession permits limit the number of boats available for rent in each administrative district but not for the various river segments within them.

Estimates made in 1981 from concession receipts and actual counts indicated annual canoe use river wide at 51,000. The RUMP envisioned that if monitoring indicated maximum use levels being exceeded on 2-3 days per season additional strategies for limiting use could be implemented. With current estimates of canoe use approaching 60,000, no follow up monitoring of canoe use is occurring. Without monitoring there is no way to know if the use limits established by the RUMP for specific river segments are still valid. Much of the required information is already available in the form of rental receipts submitted by concessioners. These are currently being hand counted twice to obtain data for the monthly public use report and to determine revenues from concessions. The main limitation on the development of a computerized data base to provide information for both these uses as well as river segment specific use is the availability of personnel to input the data.

### Description of Recommended Project or Activity

Develop and implement a river use survey which will monitor river use on the segments established in the River Use Management Plan. This survey will utilize both information already available from canoe rental concession receipts and actual counts. The concession receipts will provide daily use levels of rental canoes on each river segment while the river counts will help establish a ratio of rental to private boats. Using those ratios, estimates of total river use will be possible based solely on

Last Update: 03/27/95  
Initial Proposal: 1994

Project Statement

BUFF-N-920.000  
Priority: 15  
Page Num: 0306

rental receipts. A seasonal position would be used to conduct counts on the river and input information from concessions on rental canoes. The information would then be available for analysis of river use on each river segment.

BUDGET AND FTEs:

-----FUNDED-----				
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	=====
Total:			0.00	0.00
-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	MON	Recurring	7.50	0.50
Year 2:	MON	Recurring	7.50	0.50
Year 3:	MON	Recurring	7.00	0.50
Year 4:	MON	Recurring	7.50	0.50
Total:			=====	=====
			29.50	2.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)  
DOC (COVERED BY ANOTHER DOC)

Explanation: 516 DM2 App. 2, 1.6/River Use Mgmt

Last Update: 03/27/95  
Initial Proposal: 1995

Project Statement

BUFF-N-921.000  
Priority: 999  
Page Num: 0307

Title : SURVEY PERCEPTIONS OF RIVER USERS

Funding Status: Funded: 0.00 Unfunded: 50.00

Servicewide Issues : N18 (VIS USE-BCTRY)  
Cultural Resource Type:  
N-RMAP Program codes : R00 (Social Science Research)  
10-238 Package Number :

Problem Statement

Buffalo National River provides river recreation for over 60,000 boaters each year. The river is also the focus for an undetermined number of swimmers, bank and wading anglers, hikers, and horseback riders. All of these groups interact to varying degrees and impact on one another. Boaters range from overnight wilderness floaters, whitewater enthusiasts, jonboat anglers, and novice canoers renting from NPS concessioners.

An extensive survey of floaters on the upper and lower segments of the river was completed in 1979 and 1980 through a contract with Texas A&M University. The study developed a wealth of information on group characteristics and individual perceptions, attitudes and preferences concerning float trips. There has not any updating of the survey results in the past 15 years.

While boating use is believed to have leveled off over the past ten years, other types of recreational uses of the river are believed to be increasing. Management decisions regarding the degree of conflicts between and within user groups must be made without the benefit of updated social survey data.

Description of Recommended Project or Activity

Conduct a user survey comparable with the 1979-80 Texas A&M study. Repeating a similar survey would allow accurate comparisons of the earlier data with current data.

OBJECTIVES:

1. To provide an understanding of floaters on various segments of the river, including background characteristics nad previous experience.
2. To determine floater's expectations for their float trip on the Buffalo River.
3. Evaluate user's satisfaction with their river experiences and identify sources of satisfaction and dissatisfaction.
4. Evaluate user's perceptions of crowding and human impacts



Last Update: 03/27/95  
Initial Proposal: 1995

Project Statement

BUFF-N-921.000  
Priority: 999  
Page Num: 0308

during their float trip and at specific locations.

5. Determine user's preferences of management alternatives for regulating recreational use.

6. Compare 1979-80 survey results with current data.

Repeat the survey with an updated questionnaire every ten years.

BUDGET AND FTEs:

Source		Activity	Fund Type	Budget (\$1000s)	FTEs
			Total:	0.00	0.00

		Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:		RES	Cyclic	50.00	0.00
			Total:	50.00	0.00

(Optional) Alternative Actions/Solutions and Impacts  
(No information provided)

Compliance codes : EXCL (CATEGORICAL EXCLUSION)

Explanation: 516 DM6 APP. 7.4 B

	Project Statement	BUFF-N-930.000
Last Update: 03/27/95		Priority: 999
Initial Proposal: 1994		Page Num: 0309

Title : WILD & SCENIC RIVER DESIGNATION STUDY

Funding Status: Funded: 0.00 Unfunded: 10.00

Servicewide Issues : N12 (WATER FLOW)  
N13 (WATER RIGHTS)

Cultural Resource Type:  
N-RMAP Program codes : E00 (Environmental Planning and Compliance)

10-238 Package Number :

#### Problem Statement

Buffalo National River meets the minimum requirements for inclusion in the National Wild and Scenic River system, but lacks the eligibility, classification, and management suitability analysis necessary for nomination.

Designation as a Wild and Scenic River will afford the Buffalo River additional protection of federal water rights and promote recognition of the river's outstanding resources and significance on a national basis.

#### Description of Recommended Project or Activity

Buffalo National River has been determined potentially eligible for National Wild and Scenic River designation (Special Directive 90-4). In order to formalize the findings of SD 90-4 and proceed with the designation process, the formal eligibility, classification, and management suitability analysis required for nomination to the National Wild and Scenic River system must be completed. The Office of Rivers, Trails, and Conservation Assistance in the Southwest Regional Office will provide technical assistance in preparing the study, and will process the final recommendations.

#### BUDGET AND FTEs:

		-----FUNDED-----		
Source	Activity	Fund Type	Budget (\$1000s)	FTEs
			=====	
Total:			0.00	0.00

	Project Statement	BUFF-N-930.000
Last Update: 03/27/95		Priority: 999
Initial Proposal: 1994		Page Num: 0310

-----UNFUNDED-----				
	Activity	Fund Type	Budget (\$1000s)	FTEs
Year 1:	ADM	One-time	10.00	0.20
			=====	
	Total:		10.00	0.20

(Optional) Alternative Actions/Solutions and Impacts

N/A.

Compliance codes : EIS (ENV. IMPACT STATEMENT)

Explanation: